The Veterinary Record

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No. 48. DECEMBER 1, 1934. VOL. XIV.

General Articles

INJURIES TO THE DOG'S EYE*

PROF. J. G. WRIGHT, F.R.C.V.S.
ROYAL VETERINARY COLLEGE, LONDON

By far the commonest cause of disease of the eye in the dog is traumatic injury, and of its structures, the cornea is the one that is most frequently involved. Of the various breeds of dog, the Pekingese is the greatest martyr to eye disease, its large and prominent eyes being particularly prone to injury. In this short paper it is proposed to deal briefly with some of the common injuries of the cornea, with their sequelæ. The highly specialised, transparent integument comprising the cornea possesses structural differences which tend to modify the usual course of inflammation and repair, and any extensive deposition in it of cicatricial tissue means interference with, or even complete loss of sight.

The cornea is entirely non-vascular. It is nourished by means of the lymph flow percolating through its structure, which lymph is derived from the loops of blood vessels in the corneo-scleral margin. It is highly sensitive to external stimuli, its rich nerve supply being obtained from the ciliary nerves.

Its structure comprises five layers, which, from before backwards, are as follows:—

1. The epithelium. This is of the squamous stratified type, and is practically a continua- of the bulbar conjunctiva.

2. The anterior limiting membrane (Bowman's membrane) is a non-elastic membrane, which is really a modification of the third layer.

3. The corneal substance proper. This consists of stratified layers of connective tissue, arranged in the form of lamellæ lying parallel with the surface. In the amorphous cement substance between the layers are large, flat connective tissue cells, with numerous branching processes which anastomose to form the protoplasmic network. This layer forms the greater part of the bulk of the cornea.

4. The posterior elastic lamina (Decemet's membrane), a thin, tough, and highly elastic membrane.

5. The endothelium, which is the lining of the anterior chamber and is reflected at the periphery on to the anterior surface of the iris.

The intact corneal epithelium offers an almost insurmountable obstacle to invasion by septic organisms. Once, however, it has become wounded, or even superficially desquamated, invasion by organisms readily occurs, setting up a keratitis. Such a condition must always be regarded as serious because of the great danger of permanent loss of function consequent upon the inflammatory processes. Extension of the inflammation may lead to gross erosion and ulceration, and even the interior of the eyeball may become invaded by organisms involving the iris, the ciliary bodies, the choroid, and even the retina. When the interior of the eyeball becomes the focus of suppuration, it is generally destroyed; in fact, it may possibly endanger the life of the animal.

Provided, however, that septic invasion does not occur, the corneal epithelium regenerates very quickly, and complete repair may be effected in two to three days, without blemish. Deeper wounds of the cornea which involve the substance proper are always healed by the deposition of scar tissue. Let us take as an example the cat scratch wound. It generally has the form of a laceration penetrating the substance proper. Infliction is immediately followed by an exudation of lymph which coagulates, forming an opaque bleb on the surface. This exudate serves to seal the wound. Its lips become swollen and a variable amount of the cornea becomes opaque, due to the migration of leucocytes. In many cases it will be found on examination that the pupil is constricted. Just why a pupillary constriction should occur following a blow on the cornea is not understood; it is assumed that it is due to local parasympathetic stimulation. This constriction persists for 48 hours or so, and then passes off. Provided septic invasion does not occur, prognosis is good. Pain and photophobia rapidly pass off, the wound heals by first intention, and the corneal opacity clears up in from seven to ten days. A small linear scar will be the only result. In an adult such a scar will remain visible throughout life, but in puppies it may entirely disappear.

When such a corneal wound becomes infected the course is entirely different. Erosion may rapidly proceed, either superficially over the surface, or deeply. There is often a profuse purulent discharge. The pain caused by the

* Paper presented to the Lancashire Division, N.V.M.A., at Manchester, September 26th, 1934.

lesion introduces a danger of further damage occurring by the animal rubbing the eyeball. In peracute cases ulceration will penetrate the substantia propria down to and exposing Decemet's membrane. This structure, in the early stages, is particularly resistant, but consequent upon the pressure exerted upon it by the aqueous humour, bulges forward through the erosion, giving rise to keratocele. Keratocele is always a grave complication. Its gravity will depend chiefly upon its size. A large hernia is always liable to rupture with escape of the aqueous humour, and prolapse of the iris into the wound (staphyloma). Rupture of a keratocele is often followed by infection of the interior of the eyeball, resulting in a panophthalmitis which usually necessitates its removal. Should the interior of the eyeball escape infection, and healing occur, the iris may be caught up in the subsequent corneal granulation, causing irregularity of the pupil.

It has already been noted that the normal cornea is entirely non-vascular. When, however, it becomes the focus of septic infection, blood vessels are pushed out from the pabulum in the corneo-scleral margin, across the cornea to the lesion. This migration of blood vessels in the cornea can be seen. They form a dense band of congestion about 2 mm. in width. Whether or not this band encircles the whole of the cornea will depend upon the site and extent of the lesion. The migration across the cornea to the lesion usually occupies three or four days; when it is reached facilities for active granulation are available. The course of a granulating wound of the cornea is similar to that of the skin, and provided it remains unchecked, resolution generally occurs in from 14 to 21 days. Once an extensive infected corneal wound has become filled with granulation tissue, prognosis becomes much more favourable. This is especially the case when Decemet's membrane has been exposed. Healing by granulation is followed by cicatrisation with permanent scarring and often deformity of the surface due to shrinkage. As long as the lesion remains active individual blood vessels will be seen traversing the cornea from the corneo-scleral margin. A striking feature in the dog is the tendency to the deposition of pigment in that area of the cornea which has been traversed by blood vessels. In the Peke which has been the subject of recurrent attacks of keratitis, the whole of the cornea may appear coal black. Such an eye is not necessarily blind. Illumination of the anterior chamber shows the pigmented area to be, to a degree, transparent.

Many cases of suppurative keratitis do not undergo complete resolution; they become chronic. In the superficial type quite a large area remains roughened. The degree of opacity varies; in some cases the surface of the cornea has the appearance of ground glass, whilst in others there is little or no opacity, but the surface is dry and has tenacious exudate adhering to it. The deep type takes the form of an indolent ulcer. Both conditions may have been in existence for months or even years. Another form of chronic lesion on the surface of the cornea has the form of a small pin-head erosion which has a silver appearance.

Let us, at this point, review some of the common causes of corneal injuries.

1. A scratch or blow from a cat, is, in my opinion, the commonest.
2. Injuries from bushes and twigs; blows from balls, sticks or stones, whilst at play.
3. Self-inflicted injuries, consequent upon the irritation set up by disease of the conjunctiva or eyelids.
4. Foreign bodies. The presence of grit or sand, or quite commonly grass awns in the lower conjunctival sac. The presence of foreign bodies embedded in the cornea is not common in dogs, although occasionally a case will be encountered in which a piece of thorn, glass or other material is present in the depth of a corneal wound.
5. Laceration of the eyeball as the result of a street accident or dog fight. Refer to luxation of the eyeball in Peke.
6. Irritation of the cornea, the result of some deformity of the orbital appendages, such as entropion, trichiasis, districhiasis, conjunctival dermoid.
7. The irritant action of chemicals such as lime, ammonia, which accidently gain access to the conjunctival sac, occasionally forms a source of corneal injury.

Luxation of the Lens

At this point it is proposed to refer to a common lesion of the dog's eye, the true nature of which is not always recognised—luxation of the lens. I find on reviewing my cases for the past twelve months that 15 such cases have been encountered. Eleven have been in wire-haired fox-terriers (seven males and four females), three in sealyhams (all males) and one in a mongrel terrier (male). In six animals the condition was bilateral; in seven the right eye only was affected, and in two the left. In all, 21 eyes were involved, and in nine there was gross enlargement of the eyeball (hydrophthalmos). In all except two cases luxation was into the anterior chamber, whilst in these two it was into the vitreous. In two cases the lens had become opaque. In every case there was evidence of corneal injury indicated by a varying amount of scar tissue, in some there was a diffused chronic keratitis. In three cases only was there positive evidence as to the cause; in two this was a cat scratch, and in the third a blow from a ball.

[Since writing these remarks, five more cases have been encountered. All occurred in pure-bred wire-hair terriers, three females and two males. In three, one eye only was involved (the left) and in two the condition was bilateral. In four luxation was into the anterior chamber; in one the lens was lying in the bottom of the eye, a part being in each chamber; in one, luxation was into the vitreous, whilst in another, in which gross enlargement of the eyeball was present, the position of the lens could not be detected.]

It is probable that in every case the cause was a severe blow on the cornea. It is significant that in all those which I observed corneal injury was demonstrable. My own view is that a blow from a cat is the commonest cause, and one is impressed by the great frequency with which the condition is encountered in the wire-fox terrier breed, and to a less extent the sealyham. I am not prepared to say whether or not these two breeds chase cats more than any others, or whether the cat is more likely to stand up to them that it is to a larger dog. A second positive cause is a blow from a ball. There is certainly no evidence that they possess any congenital weakness associated with the zonula ciliaris which predisposes to lenticular luxation.

The lens is suspended in the orbit by means of the zonula ciliaris or suspensory ligament of the lens. This comprises a number of delicate fibres which pass from the ciliary processes to the capsule of the equator of the lens. The pressure of a direct blow on the cornea is transmitted through the aqueous humour to the zonula, which ruptures, liberating the lens. The luxated lens either falls forward in front of the iris, to be accommodated in the lower part of the anterior chamber, or backwards into the vitreous. Power of accommodation is lost and sight is greatly impaired.

On examination of the eye in a good light a variable degree of corneal scarring will be seen; in some cases in which the cornea is diffusely opaque the interior of the eyeball cannot be seen and the condition cannot be diagnosed. In cases of anterior luxation the eye appears to be glassy, the pupil is three parts dilated and does not respond to light. Closer examination reveals that the free border of the iris is, in fact, tucked away behind the lens, particularly at the lower margin. Illumination of the anterior chamber with an ophthalmoscope shows the lens as a large globule lying in the anterior chamber. Its margins have a silver appearance.

In posterior luxation, that is luxation into the vitreous, the anterior chamber appears deep. The pupil is dilated although there may be some movement in response to bright light. The lenticular reflections of the anterior and posterior capsule are lost, whilst under illumination the lens can be seen—a green or golden globule as of oil—in the depth of the posterior chamber. Sometimes the luxated lens becomes opaque—this makes diagnosis simple.

Hydrophthalmos—distension and enlargement of the eyeball—is a common sequel to luxation of the lens, particularly anterior luxation. (I am avoiding the use of the term "glaucoma" which is frequently applied to the condition. Glaucoma in man is a condition characterised by an increase in intra-ocular pressure, which gives rise to a definite train of symptoms due to alterations in the optic disc, but in which increase in the size of the eyeball does not appear to be common).

It will be remembered that the maintenance of correct intra-ocular tension is dependent upon the patency of the so-called filtration angle at the periphery of the iris.

> The angle formed at the junction of the cornea and the iris is occupied by the ligamentum pectinatum iridis. This is formed by the breaking up of Decemet's membrane at the margin of the cornea. It comprises a number of spaces (spaces of Fontana) which on the one hand communicate with the aqueous cavity, and on the other with the plexus of veins in the corneo-scleral margin (Canals of Schlemm). It is through these spaces that aqueous humour escapes.

In anterior luxation of the lens occlusion of a considerable area of the filtration angle may occur. This occlusion is in part mechanical, but it is aggravated by the continued dilation of the pupil. In addition, the lens by its action as a foreign body may set up iritis with adhesions.

An eye deformed by hypdrophthalmos is always blind, due to the degenerative changes which occur in the retina and optic disc consequent upon the great increase in intra-ocular tension. The condition, however, is not a painful one; in fact, the cornea may be anæsthetic.

It is not suggested that luxation of the lens is the only cause of hydrophthalmia. The condition is liable to follow any condition which interferes with the patency of the filtration angle. Permanent dilation of the pupil of central origin, adhesions of the pupil to the lens or cornea following iritis or penetrating corneal ulcer, are likely causes.

Treatment of Corneal Affections

The treatment of wounds of the cornea presents a number of difficulties which are not encountered when treating similar conditions associated with the skin and mucous membranes generally. The cornea is so richly supplied with sensory nerves that pain is always a prominent feature of recent eye injuries, and its relief becomes the primary consideration in treatment. If this is not carried out, not only are the difficulties associated with adequate local treatment

greatly increased, but there is always the risk of the animal causing further injury by interference. To prevent further injury, either mechanical or due to invasion by pyogenic organisms, is our aim, for we know that provided these can be kept in check, the natural processes of repair can quickly bring about resolution. Locally, cocaine is still the most potent and reliable agent which we possess. It must, however, be used with discretion, for, being a protoplasmic poison, if applied in too concentrated form it not only retards healing but renders the injured tissue more susceptible to invasion by organisms. Again, another disadvantage is that it cannot be sterilised by boiling, and thus old solutions should not be used. A one per cent. solution of the hydrochloride freshly prepared, using sterile distilled water, overcomes these difficulties. Procaine hydrochloride (Novocain), the local anæsthetic now in general use for subcutaneous infiltration, is a poor substitute for cocaine in eye surgery. It lacks power of penetration; in fact, is 16 times less active than cocaine on the cornea. Procaine borate (Borocain—British Drug Houses), a much more readily dissociable salt, has an anæsthetic action on the cornea approximating that of cocaine. At the same time it is much less toxic and can be sterilised by boiling. It is used in one to two per cent. solution. For flushing the eyeball with a view to removing organisms from the conjunctival sac, a saturated solution of boric acid, 0·2 per cent zinc sulphate solution, or normal saline solution, at body temperature, are adopted.

In suppurative keratitis pus and infective material should be removed as frequently as possible by irrigation of the conjunctival sac with warm boric or normal saline solution. Much irritation is often caused by matting of discharge on the hair of the eyelids. This should be overcome by anointing the lids with some simple ointment such as zinc or boric. On no account should anything irritating be used. Ointments of mercury have nothing to recommend them, and I have frequently noticed dogs rubbing their eyes after the introduction of yellow oxide ointment. Lotions of mercuric chloride or potassium-mercuric iodide have little or no antiseptic action in the strengths which they are used, and in addition they are almost immediately inactivated by the organic matter present. Watery suspensions of the colloidal metals such as silver possess a slow-acting antiseptic action and they are non-irritating. It is almost impossible in animal practice to keep them in contact with the infected focus for a sufficient time.

The treatment of chronic keratitis is a more difficult matter; the natural protective powers of the tissues are unable to check the multiplication of organisms, and the cornea has become ulcerated. One wishes to apply a preparation which has a continuous antiseptic action, and yet at the same time is non-irritating. The action of lotions in this respect is too transient to be of any great value, and one falls back upon the use of ointments. Iodoform is useful, for in addition to its antiseptic action it is also analgesic. The preparation used is Oculentum Iodoformi B.P.1932 (4 per cent. in a sterile ointment base). Ointments containing colloidal silver or silver protein compounds are useful.

In the treatment of localised chronic ulcers with exuberant granulation, I have had outstanding success from cauterisation of the lesion with indurated caustic (silver nitrate). This form of treatment, although a very old one, appears to have fallen into disuse. The action of the caustic is to destroy exuberant granulation tissue, and to stimulate the natural processes of repair. Silver nitrate has a number of advantages over other forms of chemical cautery. Its action is immediate, it is superficial, and can be immediately checked by the flooding of the eye with normal salt solution. Prior to operation the cornea is anæsthetised by flooding it with a 4 per cent. solution of cocaine hydrochloride, and allowing it to remain for five minutes. Cauterisation may be repeated in seven days if necessary. By adopting this method chronic corneal ulcers of many months' standing have cleared up in a few weeks.

One other point deserves mention. Eczema of the eyelids is a frequent source of corneal injury. The condition is extremely painful and it may be found impossible to prevent the animal interfering with the lesions and so retarding healing. Again, a local anæsthetic agent should be adopted in treatment. Cocaine itself may be employed (1-2 per cent. in an ointment base), although the ridiculous restrictions placed upon veterinary surgeons by the Dangerous Drugs Act (I refer to labelling, etc.) make one inclined to forego the use of this drug altogether. Benzocaine, B.P.1932, is the drug I have been using. It is used in a strength of 2-4 per cent. combined with a zinc oxide ointment base. It has been found effective in overcoming the irritation, and facilitating rapid healing.

In cases of lenticular luxation I know of no useful treatment. Removal of the lens will in no way improve the function of the eye; it may, however, reduce the liability to hydrophthalmos. In cases of anterior luxation in which the iris does not respond to light, an attempt should be made to provoke constriction with a view to reducing intra-ocular pressure, by the use of myotics—1 per cent. solution of physostigmine salicylate, or a 2 per cent. solution of pilocarpine nitrate.

The grossly enlarged eyeball is in no way amenable to treatment. Paracentesis serves no

useful purpose. Provided the eye remains painless it should be left alone; if, however, the cornea becomes ulcerated and painful the eye-ball should be removed.

Before closing, I wish to pay tribute to one who has been a pioneer in veterinary ophthalmology—Mr. Henry Gray. By translating Nicolas' book and by adding to it the result of his great experience, he has given us a standard work on the subject in English.

. . . . .

Discussion

Mr. R. S. White, who opened the discussion, said: I am conscious and appreciative of my privilege to-day in opening a discussion on a paper given by so distinguished a member of our profession as Professor Wright. Those of us who have heard him to-day and some little time ago in Liverpool, I am sure look forward to the day when he publishes a work on small animal surgery. Such a work is, in my opinion, badly needed and long overdue. At the same time, I feel that this discussion should have been opened by one of you with a much greater experience than I possess and in order that we may have the benefit of that experience I propose to be brief in my opening remarks.

Affections of the eye have, I think, been rather neglected, particularly in small animals, and therefore the subject of to-day's paper is a welcome one. In some ways I am sorry that the title of the paper has confined it to injuries affecting the dog's eye: it will not be out of place to express the hope that the essayist will give us an early opportunity of hearing about diseases and abnormalities affecting the eyes of other small animals.

There can be no disagreement with the speaker's statement that the structure of the eye most frequently injured is the cornea and that the breed of dog most frequently involved is the Pekingese. As you all know, it is almost impossible to visit a breeder of these dogs without finding one or more affected or recovering from the effects of an injury to the cornea. Early in his remarks Professor Wright refers to scars left as a result of a corneal ulcer. From a show point of view, disregarding for the moment any question of interference with vision due to their position, they are a blemish. On several occasions I have been informed by clients who are breeders of Pekingese that these scars can and are being removed by a veterinary surgeon in the South of England. I have either expressed ignorance of the operation or said that such a procedure was ethically wrong. I have since learnt that the removal or operation consists of infiltrating the scar tissue with an appropriate aniline dye. I would be interested to know the technique of the method and to hear of other people's experience. If this method is used with success I would like to hear what you have to say about the ethics of such an operation. I have long wished to hear an expression of opinion, perhaps in the form of a debate, on the ethics of dog-faking—the alteration of ear and tail, carriage and so forth—or possibly you may prefer to dignify it by the title "Plastic Surgery."

Deformity of the surface of the cornea following healing by granulation and subsequent cicatrisation is frequently seen in Pekes' eyes, particularly where an eye has been the subject of several attacks, characterised by dimples on the external surface.

Regarding the commoner causes of corneal injuries, most of us will agree with the speaker's order of frequency, although I find injuries due to dog fights and street accidents more frequent, in our own practice, than injuries due to foreign bodies. Whether this is yet another example of the difference between "Northerners" and "Southerners" I am not prepared to say. Luxation of the eye-ball in the Peke is very common and I often find it necessary to close the eye lids, by means of one or two sutures, in order to hold the eye-ball in place after reducing the luxation. Lime we also find to be a common source of trouble, due, I suppose, to the large number of housing estates that are springing up so rapidly in these days.

Luxation of the lens, as Professor Wright remarks, is a condition the true nature of which is not always recognised. I regret to say that prior to reading the paper you have just heard, I had not recognised the condition. That is not to suggest that I have not seen the condition. I am glad to be able to say that since reading the paper I have both seen and diagnosed the condition in a Pekingese. The right eye is affected—anterior luxation and hydrophthalmos. It is a case I saw about a month ago and then the owner complained that the eye was enlarged. I marked it in my diary as "N.Y.D." and I arranged to see it later. (The speaker's comments on the diagnosis of this condition remind me of a story. A prominent member of this Division showed another member an article dealing, if my memory serves me correctly, with the diagnosis of pyloric stenosis in the dog. Some weeks later they met again, when the article was returned and the one who had read it remarked that it was a curious thing that although he had been in practice for twenty years he had never had a case of pyloric stenosis and yet in the last fortnight he had had a dozen).

Regarding the treatment of these injuries and their sequelæ, I am sorry that Professor Wright did not deal with mechanical methods of restraint because I find at times that dogs can rival contortionists when they feel it necessary to rub a particular portion of their anatomy. Elizabethan collars are useful, whether they be of three-ply

wood, in two parts, cardboard or linoleum—in the two last cases made out of a single piece with an overlap so that when the collar is in position it is cone-shaped. I consider this to be a definite advantage. For Pekingese, I find that a collar made (on the same principle), out of buckram and lined with lint and then fastened with two safety pins is both light and effective. It has the additional advantage that the lining can be changed as often as required. I have also used, in large dogs such as greyhounds, a leather muzzle with a piece of leather stitched on to form an eye shade.

I have used cocaine with all its disadvantages of preparation. Borocain would appear to be a welcome substitute.

Regarding the matting of hair, I make it almost a routine practice to clip the hair and eye lashes in cases of a suppurative nature as, although it makes the animal unsightly, I think the resultant freedom from matting and irritation more than compensates.

Concerning yellow oxide ointment, I issue very little of this, not because I find that it irritates, but on account of a certain type of client. There are some people who, if given a preparation which they recognise, feel that they have been cheated, and think and sometimes say that they could have bought it at the chemist's themselves. For the same reason I have zinc ointment coloured pink and it is not uncommon for doctors to have aspirins coloured. Despite the speaker's remarks about the mercurial ointments, I use biniodide of mercury, 1-4000, and find it effective, also combined with two per cent. cocaine. For dispensing purposes I issue my eye ointments in collapsible ophthalmic tubes, but for clients who are afraid of hurting the dog's eyes, I find that sealed gelatine capsules containing the appropriate ointment are convenient.

Regarding the treatment of localised chronic ulcers with exuberant granulation by means of cauterisation, I would like to ask the speaker whether the use of carbolic acid has any advantages over silver nitrate in these cases. Benzocaine I have not used. Possibly its use may prevent the use of those cumbersome methods of restraint on which I have commented. I must confess that I still use large quantities of zinc sulphate, gr. 4 to 1 oz.—an old remedy but one which gives very excellent results. Neo-protosil ointment is also a useful preparation.

In conclusion, I would like to ask one or two questions. Of what value is darkness in the treatment of these conditions of the cornea? Is the administration of vitamins of value—for example, haliverol? I remember reading a note regarding the researches of two American doctors who stated that they had satisfactory results following its administration in conjunction with local treatment. As the note appeared in the journal of the manufacturers of the substance I do not attach too much importance to the statement. I believe it was more common to use calomel and zinc oxide, and I am interested to know what possible value this was supposed to have, knowing how a microscopical piece of grit feels in one's own eye.

Mr. H. Raynor Hewetson observed that Professor Wright in his excellent paper, and Mr. White in opening the discussion, had said nearly all the things which he could say on such a specialised subject. He agreed with Mr. White that the Elizabethan collar, particularly the type which extended forward like a funnel over the face, was a useful aid in preventing scratching; he made his of heavy cardboard and varnished them with shellac. He also used cocaine as an analgesic in inflamed conditions, but was doubtful as to the wisdom of using it continuously in protracted cases.

Mr. Hewetson did not know whether the keratitis which followed protracted irritation of the cornea with organisms due to conjunctivitis came within the category of injuries to the eye, but he had seen many cases where a troublesome conjunctivitis led to erosion and ulceration of the cornea. He also felt that some cases of conjunctivitis arose from epiphora due to occlusion of the nasal duct, and though Nicolas referred to catheterisation of this duct accompanied by pretty pictures of the instruments used, he had never seen or heard of this being done in practice, and he felt that it would be helpful if Professor Wright could outline a technique.

Referring to the presence of foreign bodies in the cornea, an exceedingly troublesome foreign body he got in Southport was the fine tip of star grass. This tip was frequently withered and brittle for about ¼ in. and dogs romping on the sandhills got this tip piercing the cornea and then breaking off short. It was an exceedingly difficult foreign body to extract as, being so small, it could only be seen by using a powerful magnifying lens, and however careful one was, it tended to penetrate further through the cornea on being touched, whereas if left alone a nasty keratitis resulted. The only satisfactory method he had found so far was to slide a thin flat needle through the cornea parallel to the surface, underneath the obstruction, to prevent the tip being pushed through, then to cut down on to the piece of grass and endeavour to extract or wash it out from the wound. Though successful, this resulted in a good deal of scar on the cornea, and he wondered if Professor Wright could suggest a simpler method.

Coming to the subject of keratocele, he frequently endeavoured to anticipate the ill results of this by early tapping of the cornea in those cases where he feared an ulcer might perforate. By making an artificial opening at a chosen site, one got rapid healing of the surgical wound without risk of protrusion of the iris or anterior synechia, and the healing of the ulcer was often very rapid after the consequent relief of intraocular tension.

He thought Professor Wright was probably quite correct in advocating the immediate removal of the dislocated eyes of Pekes in which much damage had been done to the sclera, but on the other hand, the removal of the eye was a serious thing to recommend a client without any alternative, because whereas many would choose the destruction of the dog, there were others who would seek advice from those who would do something less drastic, and he himself had seen

many cases where the sclera was badly torn and the interior of the eyeball damaged, but which had eventually cleared up, leaving certainly a blind, small and useless remnant of an eye, but nevertheless something which filled up a socket which many people could not bear to see empty.

In regard to luxation of the lens, he could not recollect the number of cases he had seen, but since Professor Wright had mentioned it as predominating in wire-haired terriers, he had in the interval been unable to recollect any case he had had in any other breed, a point which had not occurred to him before. He was pleased to hear Professor Wright speak well of silver nitrate, which had been discarded by many people, in recent years, in favour of the colloidal and protein salts, for in his opinion the usefulness of silver nitrate far exceeded the best of these and the control of its action was easy. He would like to know in what manner Professor Wright applied it, whether by stick or in solution.

No mention had been made up to then of the use of atropine in eye conditions. He was aware that the increase in intra-ocular tension caused by atropine was a decided disadvantage, and that many observers stated that no relaxation of the iris took place by its use when the uveal tract was infected or the seat of inflammation. Nevertheless, he found that in a great number of cases the iris could be relaxed and in his view little damage ever resulted from the rupture of an ulcer with escape of aqueous humour, provided the iris could be kept clear of the wound. It had the added advantage of quite definitely relieving pain.

He agreed with Mr. White that the cutting away of hair around the eyes when it was matted was an advantage, but he did not approve of cutting the eyelashes, because, however closely they were cut, a very short stubbly growth was left, and as whenever there was inflammation in the eye the tendency was for the eyelids to turn in, this short stubble then caused more irritation than the normal lashes. If the eyelashes were not too profuse for plucking he would agree that in some cases this might be an advantage, since no irritating ends would be left behind.

Mr. Hewetson observed, in conclusion, that he felt that once more the Society were under a debt of gratitude to Professor Wright for a practical and explanatory paper in keeping with what could usually be expected of him.

Major J. H. Wright, referring to suspected injuries to the cornea, said that various treatments could be adopted, it depending entirely on the conditions of the eye as to the best to be used. With regard to ulceration of the eye in a Pekingese or King Charles spaniel, he, in the course of his somewhat lengthy career, had seen animals have the condition periodically: it was not only due to foreign bodies but was probably hereditary. He had good results with neo-protosil ointment; it was non-irritating and could be applied easily to the cornea. With regard to the lesions, he thought the first thing to do was to remove the eyelashes with fine forceps. When there was irritation the eye was drawn in by the muscles and there was a tendency for the eyelids to invert. There were several collosol silver preparations for eye conditions; some gave good results and others did not—it all depended upon the condition of the eye. He found 1 gr. silver nitrate to the ounce of distilled water, applied once or twice a day with an eye dropper, beneficial in corneal opacities.

Mr. G. Mayall expressed his pleasure at hearing Professor Wright's paper. Referring to the Pekingese and luxation of the eyeball, he had had some cases that had recovered by the use of cold water and adrenalin, followed by castor oil. It was easier to deal with luxation of the eyeball if one received the animal soon after the condition had shown itself.

Mr. Mayall referred to three dogs he had received at one time which were suffering from about the same degree of purulent conjunctivitis. He used boracic acid and zinc sulphate on one dog, lotions of hazeline-boracic acid on another and mercuric chloride (1 in 5,000) on the third. The one on which the mercuric chloride was used recovered more quickly than the other two. He asked Professor Wright what should be done in a case of protrusion of the membrana nictitans. Following operative interference one sometimes got a fair amount of hæmorrhage, and he desired to know what measures should be taken to check that. He had used adrenalin or hazeline and found that the latter was the more satisfactory—was there any better application than either of these two?

With regard to eczema of the eyelids, it was a troublesome condition in the dog, it being sometimes difficult to prevent the animal from pawing the eyelids. He was pleased to hear the cone-shaped cardboard collar mentioned and he exhibited one that had been used in his practice.

Concerning eczema of the eyelids and conjunctivitis, he took a smear from a dog's eye and submitted it to two expert bacteriologists. He had brought their report and a photograph of the slide with him and it would be observed that opinions were expressed that the condition was not a bacterial one.

Mr. Warwick Fowle, who observed that he would look forward to digesting the paper more thoroughly when it was in print, remarked on the good fortune of the present-day student in possessing a mentor such as Professor Wright had proved himself to be.

One eye trouble he (the speaker) had repeatedly encountered was occlusion of the duct, with what almost amounted to excoriation of the face as a consequence, which defied treatment. Had the Professor ever passed a probe, as oculists often did, and if so, with an equally satisfactory result?

He had found silver nitrate very useful to remove an old scar, and he thought "collargol" was to be preferred to "argyrol" in the treatment of ulcers—two to four drops of a two per cent. solution inside the bottom eyelid (using an eye-dropper) three times a day.

Lime had been mentioned. One often met with the subjects of lime-burning of the eyes which, when the condition was really bad, were generally destroyed, but he had one extremely serious case in mind, in which the eyes were just "white blobs" and the owner would not consent to destruction nor treatment, yet in about six months the eyes were nearly normal.

He had never experienced any trouble with hæmorrhage following removal of the membrana nictitans, as had Mr. Mayall, and he though he always had better results with all eye troubles when darkness was imposed.

Had Professor Wright met with many cases in cats in which the upper eye-lid was attached to the eye-ball, and was surgical interference satisfactory? It had not proved so in the solitary case seen by him.

The President (Mr. Holroyd) said that before asking Professor Wright to reply he would like to say that he did not think that many cases of ulcerated cornea were due to injury. Some eight or ten years ago he, personally, was troubled with ulcerated cornea and he was sure there was no injury in that case. His medical advisers tried

calomel powder and other preparations, but a one per cent. solution of atropine sulphate gave the best results. He thought the most important thing was to rest the eyes. Pekingese appeared to be the breed most subject to the condition of ulcerated cornea and when Pomeranians were popular, they provided many cases.

Another condition not mentioned was parenchymatous keratitis. Had Professor Wright had any experience of it? Was 0·5 c.c. intravenous injection of spleen extract good treatment? The condition was a chronic one and very troublesome. In an ordinary ulcerated eye he used 1/20 gr. sulph. zinc and had had good results. He had found Elizabethan collars very useful and usually made his own by cutting a hole, in a piece of 3-ply wood, just large enough for the animal's head to go through.

The Reply

Professor Wright expressed his thanks to the meeting for the cordiality of his reception and also the enthusiasm with which the paper had been discussed. He thought he might well answer Mr. Matthews' question first, by giving a definition of what he meant by injury. He spoke in the surgical sense, injury comprising solution of the integument: he did not refer to what might be described as idiopathic conditions of the eyeball. The degree of resistance offered by the intact corneal epithelium to invasion by organisms approximated that of the skin. Once, however, the surface was desquamated, erosion as the result of bacterial invasion might proceed quickly. This brought up the President's point—could corneal erosion occur spontaneously? He (Professor Wright) could not answer that question. His opinion was that the vast majority of cases were due to some form of traumatic injury, although this might be very slight. The question arose—were not many of the cases of erosion of the cornea encountered in the Pekingese spontaneous in onset? The question could not be answered haphazardly. The Peke's eyes would appear to be particularly insensitive to the presence upon the surface of the cornea of foreign material, such as hairs, and it was more than likely that this could cause a desquamation which allowed the invasion of organisms. It had been suggested that certain strains of Pekingese had an hereditary predisposition to corneal disease, but he knew of no carefully observed evidence to support this.

Mr. White had referred to the obliteration of corneal scar tissue. He (Professor Wright) did not think that such obliteration was possible. Generally speaking, corneal opacity was of two types—the first, a transient form, due to infiltration by leucocytes, which cleared up as resolution occurred, and the second was due to the deposition of fibrous tissue in a healed wound. The latter was undoubtedly permanent and whilst attempts might be made to disguise its presence by tattooing with pigments such as Indian ink, such a procedure, quite apart from the risk associated with the operation, had nothing to recommend it in veterinary practice.

They must not think that it was suggested that the use of collars as a method of preventing interference with the eye should be entirely dispensed with. The point he wished to make was that they were so frequently unsuccessful, and that if one could reduce the source of the pain by the use of anæsthetic preparations, every endeavour should be made to do so. He was convinced that the primary treatment of acute keratitis was the relief of pain. With regard to yellow mercuric oxide ointment, whilst the use of this agent was time honoured, he was not absolutely satisfied as to its value. It was certainly irritating, and the fact that it had a very definite spirochætocidal action in certain specific ophthalmias in man, was not evidence that it had any valuable bactericidal action in dogs. The same remark applied to calomel.

Continuing, Professor Wright said: Phenol I consider to be a dangerous form of chemical cautery to apply to an eye. It is very penetrating; in fact, its disinfectant action would appear to be due to the fact that it is more soluble in protein solution than it is in water, and thus on the surface of the cornea it may cause deep necrosis which cannot be checked. The action of silver nitrate, however, is much more superficial because of the rapidity with which it is precipitated as an albuminate, and in addition its action can be immediately checked by flushing the eye with normal saline solution. For the treatment of chronic localised ulceration I use the indurated pencil, whilst when diffuse I prefer to paint the lesion with a 40 per cent. solution applied with a camel-hair brush. This latter treatment is also useful for chronic conjunctivitis.

I referred to colloidal and protein preparations of silver in my paper and I think that all the proprietary preparations mentioned by speakers comprise one or other of these types. If a colloidal preparation exerts any antiseptic action it does so very slowly, for in the colloidal form it is inert and it is to its slow conversion to the ionisable form that any action it may have is due; therefore, if it is to be used in the eye it should be in the form of ointment, so that it is in contact for long periods.

Mention has been made of the influence of vitamins, but I confined my remarks to injuries of the eye. There is plenty of experimental evidence to show that an absence of vitamin A from the diet of young animals will give rise to disease of the cornea; in fact, the vitamin is called the anti-ophthalmic vitamin. I do not think that dogs under normal conditions of life suffer from any lack of vitamin A. With regard to vitamin E, there is evidence to show that its administration would appear to increase an animal's resistance to bacterial infection, and so it might well be given as an adjunct to local treatment, in the form of cod-liver or halibut oil.

I agree with Mr. Hewetson regarding the presence of foreign bodies in the lower conjunctival sac, but am not familiar with the particular grass to which he refers. My experience has been chiefly of barley and oat " slights." I have never attempted to tap a keratocele, but frequently use a one per cent. solution of eserine or pilocarpin to reduce intra-ocular pressure. I refrained from mentioning the use of atropine because in the particular conditions to which I was referring I did not think it was indicated, but since the matter has been raised, let us review the actions of this drug. Primarily, it has a local sedative action upon the surface of the cornea and for this purpose might well be used. Its chief action, however, is to paralyse the nerve terminations of the parasympathetic (the third cranial nerve). By doing this it dilates the pupil, upsets accommodation and increases intra-ocular pressure. Whilst dilatation of the pupil may be of value in overcoming any tendency to anterior synechia in central corneal ulcer, the continuous rise in intra-ocular pressure it provokes may cause rupture—the more serious of the two injuries. It should be borne in mind that its action on the eye is a very lasting one. Pupillary dilatation may persist for as long as a week after a one per cent. solution has been used. For this reason it should be replaced by homatropine, the action

of which is more transient. I was asked, did I alternate solutions of atropine with eserine with a view to causing movement of the iris? A point which arises in this connection is that the action of atropine upon the iris is much more profound than that of eserine, and it takes at least ten times the concentration of the latter to antagonise the action of the former. It would appear that the most valuable action of atropine in the eye is to check movement of the iris and so relieve pain in the treatment of iritis.

Does glaucoma occur in the dog? The term is, I am afraid, used rather loosely and is generally applied to that enlarged condition of the eyeball—hydrophthalmos. I understand that in man the symptoms of glaucoma which arise insidiously are quite typical, and that the surgeon can recognise either by palpation or by the use of a tonometer, the increase in intra-ocular pressure. By means of the ophthalmoscope he is able to recognise changes in the optic disc. There is, however, no increase in the size of the eyeball. I cannot recognise such changes in animals.

A number of speakers have mentioned occlusion of the lachrymal duct. I must confess that if I meet the condition I do not recognise it, for my experience has been that any constant flow of tears can generally be ascribed to recognisable disease of the eyeball or its appendages. Of these the most important are chronic conjunctivitis, entropion, trichiasis, districhiasis, corneal dermoid and, in the cat, a peculiar congenital condition in which there is an absence of the upper conjunctiva and the lid is attached almost directly to the corneo-scleral margin.

With regard to idiopathic diseases of the eye, one has met both cataract formation and panophthalmitis associated with glycosuria in the dog, but I do not think that disease of the eye is an accompaniment of chronic contracted kidney in the dog. In the cat one has seen ophthalmitis accompany tuberculosis and septic lymphadenitis. I have not been able to make up my mind whether or not dogs suffer from a primary parenchymatous keratitis.

NOTES ON MALLEIN TESTS FOR GLANDERS

W. S. LORNIE, M.C., T.D., M.R.C.V.S.
PERTH

There are several tests for detecting glanders in animals and the methods employed are as follows: (1) The intradermal-palpebral test; (2) the subcutaneous, and (3) the combined or double test.

I.—The Intradermal-Palpebral Test

Malléine diluée is the type of mallein used for this test and it can be obtained from the various sources of supply.

Type of Syringe.—A special syringe, graduated to 1/10 c.c., is employed and the needles are approximately ½ in. long. A shorter needle is to be preferred, with a strong screw butt, similar to the ordinary dental syringe, and the needle should only project 5 to 6 m.m. from the end of the butt.

Method of Injection.—The dose given is m.ii and this is graduated by the screw on the piston. It is injected into the dermis of the lower eyelid of the left eye, parallel to the eyelid and towards the inner canthus, care being taken to inject the full dose. The syringe is held in the right hand of the operator, and with his left hand a fold of skin of the eyelid is held between the forefinger and thumb. The needle is carefully inserted into the dermis, the injection being completed by simple pressure with the little finger on the end of the piston. With practice this movement becomes mechanical and as soon as the needle enters the dermis, the operation is completed in one movement.

Reactions.—These can be classified as follows: (1) Negative reaction; (2) indefinite or doubtful reaction; (3) definite or positive reaction.

Negative Reaction.—A slight œdema of the eyelid appears between the second and sixth hours, which disappears in from 12-24 hours. No mucus gathers in the eye and the temperature remains normal. In many cases there is no apparent œdema. It should be noted that with some types of mallein, an œdematous swelling occurs in nearly every animal injected. With other types, there is no evident œdema, except that the animal may rub against the manger and cause a slight irritation of the part.

Indefinite or doubtful reaction.—There is slight œdema of the eyelid, which is commonly half closed, and a slight swelling extending to the cheek. This œdema may persist for two to three days, with a small amount of mucus present in the eye. The temperature may rise from 100°F. to 101·8°F. In such cases the right eye may be used as a control and injected with 2 mm. malléine diluée 48 hours later.

Definite or positive reaction.—The œdema of the eyelid is very intensive, visible from the sixth to the twelfth hours and increasing till the eyelids become closed and gummed together by a profuse discharge of viscid mucus which also runs down and adheres to the face and cheek of the animal. The conjunctiva is highly injected and the face becomes swollen, tense and painful. The formation of this facial œdema is usually triangular, projecting downwards and forwards towards the lower extremity of the zygomatic ridge. In many cases the whole of the face becomes swollen. The lymphatics in the area are corded and the temperature may rise to 105°F. The maximum phase of the reaction is reached between the 24th and 26th hours, and persists for from three to five days. A reacting animal may be off its feed, appear very sick, and may rest its head on the manger.

The intradermal-palpebral test is said to be more delicate than the subcutaneous one in that the reaction is more violent and rapid. No temperature testing is necessary and the saving of time and trouble in this respect is considerable.

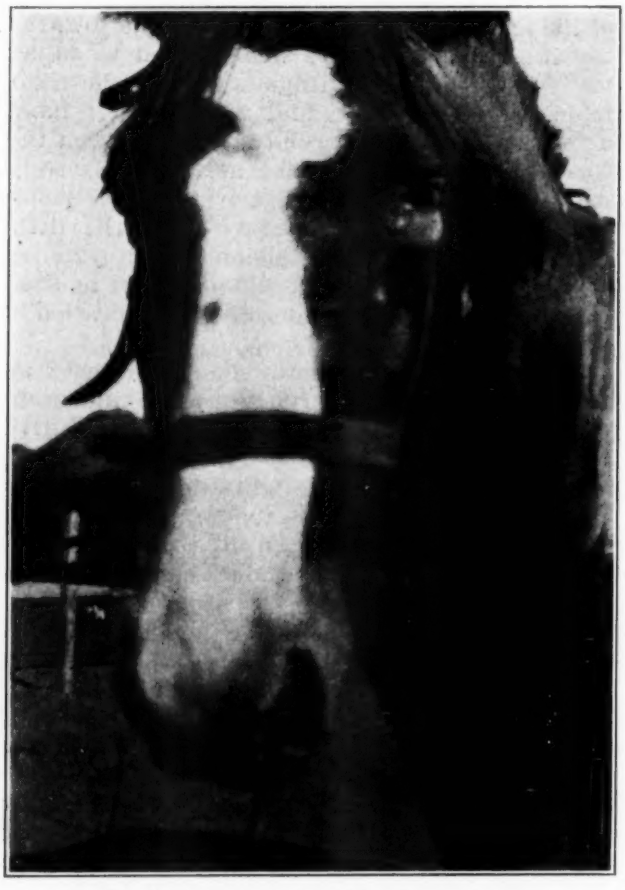

Photo. A.:—Typical Eye Reaction.

Photograph A shows a typical eye reaction, with the mucus discharge and the swollen face. The eye of this animal became completely closed before destruction.

The Subcutaneous or Neck Test

The dose for a horse is 1 c.c. of ordinary mallein, and 2 c.c. for a mule. No animal should be tested unless the temperature is normal. The site selected is the middle of the near side of the neck and the usual cleansing precautions are taken prior to injection. Late evening is the most convenient time and the animal's temperature should be taken every three hours up to the twenty-fourth hour, though it is usual to do this only at the ninth, twelfth, fifteenth, eighteenth and twenty-first hours. Reaction generally occurs during these periods and a temperature curve of 2-4°F. above normal, and the formation of a persistent local painful swelling, indicate that the animal is affected with glanders.

The local reaction is a typical one, formed gradually and generally persisting for four to five days or longer. The swelling is plate-like in character, firm in consistence with well-marked, raised borders, and measuring in diameter from 5-in. to 14-in. and about 1-in. thick.

With a moderate swelling, the case may be considered doubtful if there is no temperature variation, and a further test may be made at the end of 14 days or later.

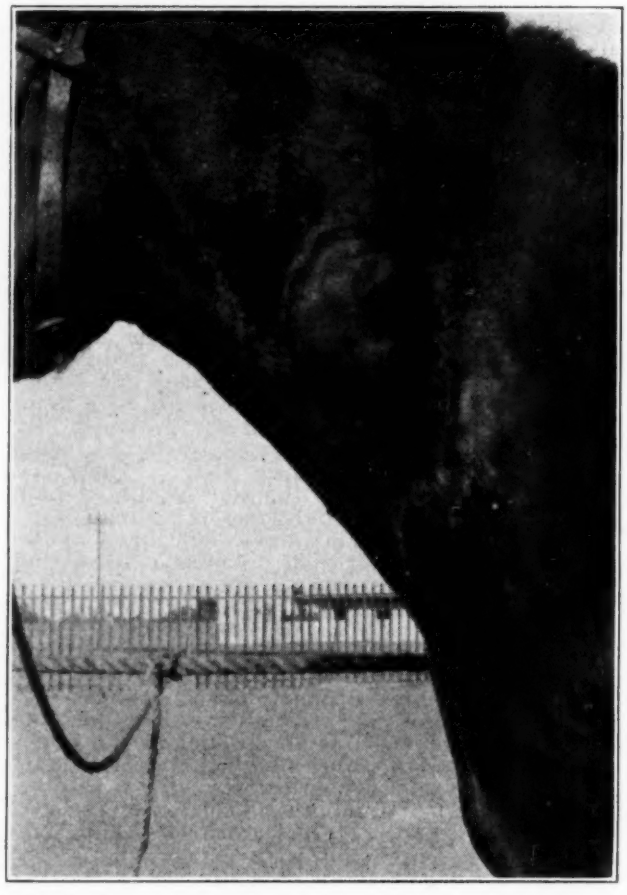

Photo B.:—Same Horse, showing Neck Swelling from Subcutaneous Method. Side View.

The Double Test

This test is the intrapalpebral combined with the subcutaneous. It is a very effective test and, if the reaction is slow or delayed, the case should be kept under observation for several days.

Mallein is not infallible, but it is a valuable diagnostic agent and with care 97 per cent. of cases will be detected by its use. It is well known, however, that some chronic cases fail to react and it may therefore be necessary to increase the dosage of mallein still further, before a reaction is obtained.

Cases

The following cases are given as examples:—

No. 1.—*Seven-year-old brown mare.*

Neck test applied September 13th. Temperature normal.

Date.	*Reaction.*	*Temperature.*
September		°F.
14th ...	nil.	normal
15th ...	nil.	normal
16th ...	slight œdema	normal
17th ...	slight œdema now painful	101
18th ...	increasing	102·5
19th ...	increasing	104
20th ...	increasing and very painful	104

Maximum size of swelling 6 in. by 6 in.

This case was a delayed reaction and *post-mortem* discovered lesions of glanders in the lungs and liver.

Case No. 2.—*Twelve-year-old brown mare.*

Mallein Test. Eye (I.D.P.) September 29th. Reaction—doubtful.

Retested (Double test) October 13th. *Reaction.*—Typical eye reaction, with copious discharge.

In the neck the swelling measured 6 in. by 6 in. and the chart is as follows (initial temperature normal):—

Hours.	*Temperature.*
	°F.
12th	103
15th	103·6
18th	104
24th	102·6

Glanders confirmed on *post-mortem.*

Case No. 3.—*Twelve-year-old bay mare.*

Mallein Test. (I.D.P.). September 13th. Negative. *Retested* September 23rd. Negative. *Retested* October 22nd, showing a slight œdema of eyelid and therefore retested by the neck method on October 23rd.

Reaction.—Maximum temperature recorded 101·F. No local reaction of any importance was noted, only a slight cording of the lymphatics, with severe pain at the point of injection. This animal was in good condition and was destroyed on suspicion.

Post-mortem.—Chronic case of glanders.

Case No. 4.—*Seven-year-old bay mare.*

Mallein Test (I.D.P.) November 27th. Negative. *Mallein Test* (Subcutaneous.) December 3rd. Negative.

Clinical Examination.—The neck of the animal was extended; slight epistaxis left nostril; appearance of ulceration on Schneiderian mucous membrane--difficult to detect owing to the presence of blood; pneumonia left lung; temperature 105°F.; hind legs swollen and on palpation farcy buds were detected in the inguinal region.

Diagnosis.—Glanders (farcy).

Post-mortem discovered extensive ulceration of the Schneiderian mucous membrane of the left nostril, confluent and œdematous. The right nostril was highly injected and œdematous. Ulceration of the epiglottis and trachea; mediastinal glands affected; lesions of the lungs, spleen, liver; pneumonia, pleuritis, and peritoneal adhesions.

This case did not react to the tests. Local reaction was only 2 in. by 2 in. and unsatisfactory. The temperature was never normal.

A case of clinical glanders and tested as an experiment.

Case No. 5.—*Eight-year-old bay mare.*

Mallein Test (Subcutaneous) January 1st. Negative. *Mallein Test* (Subcutaneous) January 28th. Negative.

At the beginning of February it was noticed that this suspected case had developed a small nodule on the neck and further examination revealed the presence of other recent nodules, with cording of the lymphatics of the shoulder and near hind leg.

The I.D.P.T. was applied and a very slight non-typical reaction was obtained.

Post-mortem.—This was an old-standing case of glanders which had failed to respond to the neck test on two occasions and gave a slight I.D.P.T. reaction.

Case No. 6.—*Nine-year-old brown stallion.*

Clinical Examination.—Farcy lesions on left jaw and near hind leg. Submaxillary glands enlarged.

Mallein Test (I.D.P.)—Reaction positive. Animal destroyed.

In addition to the usual lesions found, in many cases liver nodules have been observed in conjunction with peritoneal lesions. These liver abnormalities appear as greyish spots on the capsule, or are found deep seated and in a few cases have a miliary appearance. The peritoneal lesions are found in the region of the diaphragm and are similar to numerous papillæ.

The Veterinary Record

December 1st, 1934.

THE BENEVOLENT SOCIETIES OF THE PROFESSION

OUR attention is drawn to the confusion which appears to exist in the minds of the members of the veterinary profession regarding the benevolent societies.

There are two such organisations, namely, The National Veterinary Benevolent and Mutual Defence Society, founded 1865, and The Victoria Veterinary Benevolent Fund, established in 1897. These two societies are quite distinct and separate bodies and their respective functions are as follows:—

The Victoria Veterinary Benevolent Fund exists to assist and relieve necessitous and deserving members of the Royal College of Veterinary Surgeons or their dependents. The fund is maintained by voluntary contributions and has to depend entirely upon the generosity of subscribers and the proceeds of charitable efforts which may be made from time to time by well-wishers of the fund. It is important to appreciate that assistance is not confined to subscribers to the fund, but it is a regrettable fact that the regular contributors comprise only approximately 10 per cent. of the total number of registered members of the Royal College. The ordinary membership subscription is only 10s. 6d. a year, and 50 such subscriptions are needed to make one single grant of 10s. a week. The Secretary's address is 10, Red Lion Square, London, W.C.1.

The National Veterinary Benevolent and Mutual Defence Society was originally founded because it was felt that a profession such as ours should have some organisation which would be in a position to assist and defend veterinary surgeons against actions-at-law resulting from opinions honestly expressed by them in the course of their practice or other professional

work and which, in the absence of such support, might entail loss of both reputation and money. It will be seen, therefore, that the main function is in connection with defence—and it is the only Veterinary Defence Society in existence. The income is derived from members' subscriptions and, obviously, only such members are entitled to be defended should occasion arise. Surplus funds, along with any donations, are transferred to the benevolent side of the Society's activities, and this money is utilised in exactly the same way as in the case of the Victoria Veterinary Benevolent Fund, even to the assistance of non-members of the Society or their dependents.

The annual subscription is 10s. 6d. and there is an additional entrance fee of one guinea. As in the case of the "Victoria" fund, the number of members comprises approximately 10 per cent. of the total number of registered members of the Royal College, and this is even more surprising, in view of the fact that the total outlay in subscriptions is not only assisting charity but is in the nature of a very valuable insurance cover against malicious attacks of dissatisfied clients and the possible resultant loss. The Secretary's address is Sunlight House, Quay Street, Manchester, 3.

Although the two Societies are quite independent of each other they keep in close touch on benevolent matters and thus avoid overlapping.

It is sad to reflect that the Societies are so poorly supported, and we would express the hope that this clarification of their respective aims and objects will result in increased interest being taken in the activities of these very worthy organisations by all veterinary surgeons, no matter in which branch of the profession they happen to be engaged.

PROPOSED VETERINARY INSPECTION RATE IN NORTHERN IRELAND

The attitude adopted by the Belfast Public Health Committee towards the Northern Ministry of Agriculture's proposed measure setting up a system of veterinary inspection of cattle by whole-time officers to operate the milk marketing scheme was explained to the Finance Committee at a recent meeting.

While agreeing with the principle of co-ordinating the veterinary inspection service the Health Committee object to the Ministry's proposal to meet the increased cost by levying a farthing rate on local authorities.

Representatives of the Health Committee attended the meeting of the Finance Committee, at which it was decided to appoint a sub-committee to confer with a sub-committee of the Health Committee in order to define clearly the Corporation's policy regarding the projected farthing rate.

Clinical Reports

MITRAL ENDOCARDITIS IN A FIVE-MONTHS-OLD FOAL

GWILYM O. DAVIES, M.V.Sc. (Liv.), M.R.C.V.S., D.V.H.

University of Liverpool

The subject was a pedigree Shire filly foal, born May 7th, 1934, to which the veterinary surgeon's attention was called for the first time on August 22nd, 1934, the foal being then 14 weeks old. The animal was dull, her movements slow and she had become indifferent to another foal in the same field with which she previously frolicked. The foal's condition was good; her pulse and heart beats were normal, but her temperature was 104°F. Examination of the fæces revealed numerous *ascaris* eggs.

The animal was treated for worms and passed several ascarids and an immature bot in the fæces. During treatment the temperature went up to 107°F., and the respirations increased. From that time the temperature readings fluctuated between 102°F. and 104°F.

A week later the animal was appreciably worse, the head was depressed and there was a tendency to stumble on her forelegs. She would sometimes sleep for hours and then suddenly get up and gallop round the field as if normal.

Left Ventricle of Foal (Six Months) Showing Vegetations on Heart Valve and Chordæ Tendineæ.

The pulse was definitely intermittent and cardiac disturbance was diagnosed.

The foal died on October 9th at the age of five months. *Post-mortem* examination revealed excessive dilatation of the heart, venous congestion of the lungs, and nutmeg liver.

Examination of the heart discovered extensive vegetations on the mitral valves. The lesions, as can be seen in the photograph, had also extended along the chordæ tendineæ and also affected one moderator band.

The interest in this case is particularly associated with the extensive nature of the lesions in relation to the age of the foal, and it affords some idea of the rapidity with which such lesions can develop.

The origin of infection must remain obscure as there were no umbilical or other lesions present to indicate a possible avenue of infection. Furthermore, according to the owner there was nothing unusual apparent at birth.

Sections of the vegetations revealed the usual histological appearances with masses of cocci scattered throughout the lesion. As the tissue had been preserved in formalin when received it was not possible to determine the precise nature of the infecting organism.

* * * * *

PERFORATION OF THE POSTERIOR AORTA FOLLOWING ŒSOPHAGEAL RUPTURE IN A PUPPY

G. K. BUCKLER, M.R.C.V.S.
Macclesfield, Cheshire

The subject was a four-months-old Aberdeen puppy.

When first seen the animal had a small piece of bone wedged in the œsophagus at the entrance to the chest. By means of a small probang the obstruction was removed from this site and, as far as could be judged, pushed down into the stomach, causing instant relief. The owners were instructed to keep the puppy on a liquid diet for about a week in order to give the bruised œsophagus time to settle down and also to prevent further irritation.

Four days later the puppy was again seen, and this time it was in a state of collapse. It appeared that the animal had been given two or three pieces of hard biscuit, and within a few minutes of eating these made attempts to vomit. At first nothing was vomited, but quite suddenly there had been a gush of blood from the mouth.

The puppy was in a state of coma and the buccal mucous membrane and the conjunctiva were dead white. The pulse had almost disappeared and the heart sounds were very faint and rapid. As a last resort an injection of pituitrin was given in an attempt to check the hæmorrhage, but this had no effect and within 20 minutes the puppy was dead.

A *post-mortem* was made a few hours later. The cause of all the trouble was found in the œsophagus just inside the entrance to the thoracic cavity, at the point where the œsophagus crosses the arch of the posterior aorta. A sharp piece of bone—a portion of a sheep's vertebra—was lodged there and one jagged spike had ruptured the œsophagus and penetrated the wall of the posterior aorta.

There was a small quantity of blood in the thoracic cavity. The stomach was full of blood. The mucous lining of this organ was washed and carefully examined, but no trace of injury or ulceration could be found. No other pathological condition could be detected, apart from a general pallor throughout the body. From the findings at the *post-mortem* it appeared that death was due to internal hæmorrhage following rupture of the posterior aorta at the place mentioned.

The puppy had shown no further symptoms of distress following the use of the probang and had taken liquid food readily; in fact, until the solid food was given it had been, to all appearances, quite normal.

The œsophagus may have been ruptured in the first instance, although had this occurred the exhibition of other symptoms would have been expected.

* * * * *

VAGINAL TUMOUR IN A CAT

G. K. BUCKLER, M.R.C.V.S.
Macclesfield, Cheshire

The history of this case was that the cat had commenced to kitten two days previous to being brought to the surgery. She was about eight years old and had had several litters of kittens without any difficulty. This time, however, as no kittens appeared, the owners had a look at the cat and found that there was a large round object projecting from the vulva.

On examining the cat it was found that the object, which was a little larger than a golf-ball, was firmly attached a little distance inside the vulva. The possibility of a prolapsed bladder was considered, but this was ruled out by the hard nature of the object and also by the fact that, with the exception of a few drops of foul-smelling, dark fluid, no liquid escaped when a needle was inserted into the mass. As decomposition had already set in and the cat was in an exhausted condition, the owners were advised to have the animal destroyed. One fully-developed kitten could be palpated in the abdomen.

A *post-mortem* was made and it was then discovered that the prolapsed object was a neoplasm attached to the vaginal wall. The ovaries and the uterus, in one horn of which was a fully-developed kitten, appeared to be quite normal, and the bladder and urethra, as far as one could see, were free from any abnormality.

The genital organs were sent to Mr. G. O. Davies, M.V.SC., M.R.C.V.S., at the Liverpool University Department of Veterinary Pathology, in order that the exact nature of the tumour might be ascertained. Mr. Davies very kindly made a microscopical examination of the material and reported that the tumour was a simple fibroma.

The tumour and the vaginal attachment must have been prolapsed owing to excessive straining on the part of the cat when the tumour had reached such a size as to cause local irritation and reflex muscular contractions.

Even if the cat had been seen in good time it is doubtful whether surgical interference would have saved her, as the tumour was attached to a large surface of the vaginal wall and was not pedunculated.

INSPECTION OF DAIRY CATTLE IN NORFOLK

At a recent meeting of the Norfolk Agricultural Committee the Diseases of Animals Sub-Committee reported that the Joint Committee on Routine Inspection of Dairy Cattle had carefully investigated this question with a view to better administration of the Milk and Dairies Acts and Orders and the Tuberculosis Orders, and had endeavoured to arrange for such inspection on an economical basis.

The sub-committee considered that one inspection of herds per annum was insufficient, and at least two inspections must be undertaken to secure a reasonable measure of control of milk produced for human consumption. Schemes operating in other counties, with conditions similar to those of Norfolk, had been carefully considered.

The desirability of employing full-time inspectors had also been investigated, but the committee were confident that the work could be efficiently dealt with by the present part-time inspectors. As a result of lengthy negotiations the veterinary inspectors, as an experiment for one year, had agreed to carry out two inspections of dairy cattle per annum at a fee of 9d. per cow per annum, including the taking of samples of milk in suspicious cases. This charge would also include travelling expenses, but the inspectors asked that where long distances have to be travelled to inspect only a few animals, a special allowance might be made, and the Joint Committee recommended that if at the end of the year any cases of hardship were brought forward, such cases should be considered on their merits. The inspections would be so arranged that they took place approximately at intervals of six months, and the Clerk of the Council and the County Medical Officer would arrange with the inspectors for reports on each inspection, which would be of service in dealing with both the public health and the diseases of animals aspects of the matter; it was intended that where an Inspector observed in the course of his routine inspection an animal in which tuberculosis could be diagnosed at once, the preliminary steps under the Tuberculosis Orders should be taken forthwith, thereby economising in both time and fees.

The cost of new inspection fees, additional compensation, valuation fees, additional fees under the Tuberculosis Order of 1925, biological work, etc., was estimated at £2,850. and provision to this extent had been allowed for in the estimates of Diseases of Animals Acts Sub-Committee for the financial year, 1934-35. The report was passed

Abstracts

[Eradication of Tuberculosis among Livestock in the United States. Wight, A. E. (Chief, Tuberculosis Eradication Division, Bureau of Animal Industry, United States Department of Agriculture, Washington, D.C., U.S.A.). Paper No. 21, Twelfth Internat. Vet. Congress, New York, 1934. *Author's Summary.*]

The coöperative campaign to eradicate tuberculosis among livestock in the United States of America was undertaken after many years of preliminary research and tuberculin testing of cattle. The work is substantially supported by the United States Congress and various State legislatures which have made liberal appropriations.

At the beginning of the eradication work in 1917, the chief activity was the testing of individual herds, most of which were pure bred. During recent years tuberculin testing has been conducted more largely on the area plan, which involved the testing of all cattle in a given area, such as a county. When the degree of tuberculous infection of cattle does not exceed one-half of 1 per cent., a county is declared to be a modified accredited area. The first counties, 18 in number, located in four States, were placed in the modified accredited area in July, 1923. About 60 per cent. of all the counties in the United States are now in that status.

The first survey to determine the approximate extent of tuberculosis throughout the United States was conducted in 1922 and showed that about 4 per cent. of all the cattle were affected with the disease. However, in about one-half of the area of the country the incidence of bovine tuberculosis did not exceed 1 per cent., and the disease existed to a high degree in only a small percentage of the total area. Since the time of the first survey the extent of the infection has been steadily reduced.

Much of the tuberculin testing of cattle has been performed by accredited veterinary practitioners working under State and Federal direction. The owners of condemned tuberculous cattle are partially compensated through State and Federal funds. Adoption of milk ordinances by municipalities, requiring their dairy products to be obtained from cattle that have passed the tuberculin test, has been very helpful to the campaign.

There has been a considerable reduction in the number of cattle and hogs found to be affected with tuberculosis, at packing centres operating under Federal supervision. Since 1916 tuberculosis in cattle slaughtered, exclusive of known reactors, decreased from 2·35 per cent. to 0·4 per cent. Since 1924 the percentage of tuberculosis in hogs slaughtered under Federal supervision decreased from 15·2 per cent. to 10·5

per cent. The susceptibility of swine to avian tuberculosis is the reason that there has not been a more rapid reduction in tuberculosis of hogs.

Tuberculin used in detecting tuberculosis in the living animal has been prepared by the Federal Bureau of Animal Industry since 1893. The cleaning and disinfection of premises previously occupied by tuberculous cattle are important. The disinfectants principally used have been compound cresol and sodium orthophenylphenate. There are now under supervision for the eradication of tuberculosis 4,600,000 herds, containing 43,000,000 cattle, which is about 65 per cent. of the total number in the country. Coöperating veterinarians have applied approximately 130,000,000 tuberculin tests to cattle. As a result about 3,000,000 reactors have been removed and destroyed. The work is progressing in a favourable manner.

* * * * *

[**The Control of Streptococcus Agalactiæ Mastitis.** Steck, W. (Director of the Veterinary Medical Clinic of the University of Berne, Berne, Switzerland). Paper No. 17, Twelfth Internat. Vet. Congress, New York, 1934. *Author's Summary.*]

This report deals exclusively with the control of mastitis due to *Streptococcus agalactiæ*, briefly called agalactiosis. It is based mainly on two assumptions: (1) That the surroundings of the animal harbour the streptococci only temporarily, that is, that the contagion does not arise from the host of saprophytically-growing streptococci in the stable; and (2) that the internal disinfection of the mammary gland is still not an easy task nor likely to be achieved very easily for some time to come.

Under these conditions the principal measure in the control of agalactiosis is the protection of healthy animals against infection. This old principle has been rendered more effective by the realisation of the existence of latent infections with *Str. agalactiæ*.

A herd is best separated into three groups of animals: Clinical cases—*i.e.*, those with relatively heavy infections; latent cases; and uninfected animals. Strict separation for a long period is a matter of considerable difficulty in small herds and those of medium size.

The principal effect of chemotherapy is to minimise the spread of the infection and to shorten the period of separation.

Three problems are discussed in more detail: The detection of streptococcic infection, vaccination and chemotherapy.

The efficiency of the principal methods of detection is compared. Microscopic examination of 100 fields of a well-stained (Gram) sediment smear generally gives a positive result when the number of germs in whole milk exceeds 2,000; surface culture of a maximal amount of sediment when it exceeds 10; direct culture of whole milk when it exceeds 2.

Vaccination has not proved to be useful when carried out in such a way that its effect could be compared with the behaviour of true controls. It is pointed out that the extreme slowness of spreading and the gradual decrease of the severity of subsequent cases may mislead the observer, if the number of control animals is not sufficient. Vaccinated and non-vaccinated animals did not reveal any significant difference in the development of the infection followed by repeated quantitative and qualitative cultural examination of the milk of single quarters.

Chemotherapy with simple antiseptics has proved to be inapplicable owing to the irritation produced. Only more complicated molecules of lower irritant properties can be used. At the present time acridine derivatives, introduced into the treatment of mastitis ten years ago, are in the foreground. Close study of this therapy has brought out the following facts of particular importance:—

(1) Large quantities of solution (1,000 c.c. or more) are required for the infusion of one quarter, the only practicable way of application being injection through the teat canal.

(2) Unfortunately only a small quantity of the liquid injected can be withdrawn and this quantity may vary considerably, thus exerting an almost uncontrollable influence on the degree of irritation produced as well as on the bactericidal effect.

(3) There is no indifferent watery solution known at present.

(4) Sufficient statistical data (from field observations) on the relative efficiency of various acridine derivatives are not yet available. In a comparison of five derivatives (uberasan, rivanol lactate, rivanol chloride, trypaflavine, and entozon), trypaflavine excelled in slightly altered secretions and entozon in completely pus-like secretion, when solutions of equal irritant effect were compared.

(5) The therapeutic concentrations are given as 10 to 20: 1,000 for uberasan, 0·25 to 0·5: 1,000 for rivanol, and 0·8: 1,000 for entozon. Under strictly comparable experimental conditions, we found tolerated by the udder: Rivanol, 0·3 to 0·35; uberasan, 10; entozon, 0·4; trypaflavine, 0·1 to 0·15 in 1,000 c.c. of water. Higher concentrations are tolerated if the action is confined to the milk cistern.

(6) With regard to the removal of the streptococci, which is the only satisfactory effect of treatment, an efficacy of over 90 per cent. is to be expected if the treatment is repeated sufficiently often. Statistical data on the number of treatments necessary with various methods are still too scanty. The search for improved methods ought to be continued.

The control of mastitis due to *Streptococcus agalactiæ* can be rendered efficient by a combined application of three procedures: Elimination (fattening, slaughter), separation of all infected animals, and chemotherapy.

* * * * *

[**The Piroplasmoses.** Yakimoff (Director, Parasitological Laboratory, Leningrad Veterinary Institute, Leningrad, U.S.S.R.). Paper No. 32, Twelfth Internat. Vet. Congress, New York, 1934. *Author's Summary.*]

The piroplasmoses of domestic animals prevail the world over. As to their classification in later years, there have been two opinions. Dennis, 1932, recognises an intermediate form between the special hæmoflagellates and the hæmosporides. Regendanz and Reichenow, 1933, speak of their contact with the rhizopodes. In opposition to the Algerian school, we give consideration to the classification given (in a table), with the introduction of a new group termed by us "Francaiella." Lately, we have carried on work on the biology of the piroplasmoses, identical from the viewpoint of morphology. Moreover, we have discovered the tick vectors of new genera of piroplasms, and we have experimented with the transmission of diseases by other ticks.

To Dennis, 1932, belongs a great work on the development of *Piroplasma bigeminum* in the *Boophilus annulatus* tick, and to Regendanz and Reichenow, 1933, in the development of *Piroplasma canis* in the *Dermacentor reticulatus*. As to the rupture of the spleen reported in this disease near the Baltic Sea, this is nothing but a matter of supposition.

Sergent, 1924, has introduced into the practical diagnosis of piroplasmoses the method of calculating the percentage of the various forms of parasites, which we have termed, further on, the "piroplasmic formula." Belaieff, 1933, tried different serological methods to diagnose babesiellosis, which did not attain specific results. No little information was gathered regarding immunity and the conditions determining the "break" in immunity.

We have found that zebus are susceptible to infection by the various piroplasms, and Lestoquard, 1931, established the same findings in regard to buffaloes. Much was done, particularly in the treatment of the piroplasmoses, in which silver, dyes, and arsenic products played a prominent rôle. Discovery was made of the possibility of curing certain piroplasmoses which had until then resisted all treatment (nuttalliosis). A new method of protection advocated by Theiler was introduced, using virus followed by the injection of trypan blue. This method was modified in that instead of using attenuated virus there was used virus recovered at the culminating point of infection; for the protection of calves there was likewise used blood at the height of its virulence.

Sergent and collaborators, 1924, in Algiers, elaborated on a method of immunisation based on the exact knowledge of the alternating periods in the virulence *in vivo* and the different intervals of time following the disease. Horses were treated with trypan blue seven to nine days after being turned to pasture. The injection of trypan blue alone in cattle did not give positive results. The fight against ticks was introduced in certain sections (U.S.S.R.) only as it pertained to certain species (*Boophilus*), while in other sections the battle was useless as it pertained to other species (*Ixodes ricinus*).

* * * * *

[**Bacillary White Diarrhœa of Chickens.** Wagener, K. (Official Veterinary Adviser and Leader of the State Veterinary Research Institute, Landsberg [Warthe], Germany). Paper No. 75, Twelfth Internat. Vet. Congress, New York, 1934. *Author's Summary.*]

The researches conducted from 1930 to 1934 along the lines of combating pullorum disease have furthered the inquiry into scientific problems and have contributed to their clarification. *Salmonella pullorum* and *Shigella gallinarum* are to be considered as identical or, at the most, varieties of one and the same species of bacterium. Fowl typhoid occurs mostly as a latent, chronic, occasionally septicæmic infection among chickens. When the ovary and ovum are affected, the offspring will succumb to the disease in an acute form, clinically known as "pullorum disease." A differentiation according to various causative agents or a splitting of the definition of pullorum disease is not justified either on biological grounds or for practical reasons.

Pullorum disease occurs epizoötically not only in chickens, but also in turkeys and guineafowls, and occasionally in ducks. Ovarian lesions corresponding to those found in chickens, are also present in turkeys. The causal relationships pertinent to the discharge of the germs by way of the egg need further clarification through exact observations and experimental investigations. The pathological anatomical picture of pullorum disease is characterised by so-called "pullorum nodules." In addition to these there may be other inflammatory and necrobiotic lesions. The causative agent of pullorum disease may also be discharged from functioning ovaries which are unchanged microscopically.

In general, no obligation to give notification of the outbreak of pullorum disease exists in the various countries. There is considerable agreement concerning the conception that this disease is not to be combated by severe Government regulations, but by voluntary measures of the poultry raisers themselves. It is, however, the duty of the Government to organise and further

the work of combating pullorum disease by appropriating means for the investigation of the disease, for giving information to the breeders, and for the certification of flocks free from the disease.

All attempts at treatment or cure of the disease by means of immunotherapy or chemotherapy have proved valueless. The spread of pullorum disease in mammoth incubators having artificial ventilation must be combated by proper disinfection. Care should be taken that the eggs are not injured by the disinfection. The pullorin test failed to come into vogue because it did not prove sufficiently reliable and efficient for the recognition of latent infection in chickens.

The basis for combating pullorum disease is the methodical blood examination, which can be carried out in three different ways. The rapid whole-blood agglutination test developed by Bunyea, Hall and Dorset is a valuable addition to the modern methods of combat. Its practicability has been proved in large numbers of comparative tests. Especial care is necessary in the preparation of the test fluid. Uniformity of the test fluid in the various countries, subject to international agreement, should be the goal. The reliability and efficiency of the blood examination depend upon its execution in the hands of well-trained and experienced veterinarians. Blood examination does not belong to the layman's sphere.

With a methodical and conscientious examination of the blood it is possible to lessen the number of positive reactors in a flock and to create reactor-free flocks, to improve the results of incubating, hatching and rearing, and often also to influence favourably the laying capacity. Observations in practice have shown that at times there are certain predisposing conditions necessary before pullorum disease will reach epizoötic proportions. The reason for this is found partly in peculiar qualities of the animal body, and partly in certain extraneous influences. The clarification of the causal connections responsible for the outbreak of pullorum disease is an important task in the further research into this disease.

* * * * *

[**On the Occurrence of Digestive Ferments in Fœtuses.** Neseni, R. *D.T.W.* 1934. *42.* 14.]

By various methods of qualitative and quantitative analysis the author was able to show that in calves amylase occurs from the fourth month and liver amylase from the third month of fœtal life. Amylase was also irregularly present in the pancreas at the fifth month in the 15 calf fœtuses examined. Stomach and liver lipase was present from the sixth month and pancreatic and intestinal lipase from the fifth month. Pepsin was present from the third month, chymosin (a second gastric peptic ferment) from the fifth month, trypsin from the seventh month and erepsin from the fifth to sixth month.

Two pig fœtuses up to four months old were examined; salivary amylase was absent, but liver amylase was present. Pancreatic diastase was present in traces from the fourth month; lipase was found in the stomach, liver, pancreas and intestine. Pepsin and chymosin, but not trypsin, were present at four months.

Five sheep fœtuses between three and five months old were examined. Salivary amylase was not found, but amylase was present in the liver at three months and in the pancreas at three-and-a-half to four months. Lipase was present in the pancreas at three-and-a-half months, in the stomach at four months and in the liver and intestine at five months. Pepsin occurred from the third month and chymosin from the fourth; trypsin was not found before four-and-a-half months of age nor erepsin before three-and-a-half months.

J. E.

* * * * *

[*Salmonella pullorum* **Infection in Swine.** Wagener, K. (1934.) *Deuts. tierärztl. Wschr.* No. 12.]

It has become the practice on some large poultry plants to dispose of chickens which have died of bacillary white diarrhœa or reactor birds by feeding them to swine. In order to discover the fate of *S. pullorum* under these circumstances the following experiments were carried out by the author, at reasonable intervals, on two eight- to ten-week-old pigs.

(1) Infected chicks were fed for a period of eight days, mixed with the ordinary ration. No rise in temperature was observed, nor could *S. pullorum* be isolated from the fæces.

(2) One litre of bouillon culture was fed on two successive days. There was no disturbance of health and *S. pullorum* could not be recovered from the fæces up to the fourteenth day after the feeding.

(3) After a subcutaneous injection of 5 c.c. of culture there was a slight rise in temperature and the agglutination titre rose to 1 : 40.

At the end of seven months the two pigs were killed and complete cultural examination made of all the organs, with negative results.

N. S. B.

* * * * *

[**Natural and Experimentally-produced Gangrenous Mastitis in Cows.** Parshall, C. J. (1934.) *Cornell Vet. 24.* 2.]

Observations were made on 22 cases, seven of which occurred in the warm months of the year and the remainder during wintry weather. The

type is defined as an inflammation of the mammary gland followed by necrosis and the destruction of considerable tissue. One quarter alone is at first affected and the course is always rapid. Lameness is usual, the temperature rises to 104°F., and persists for three to five days, and in cases that recover the quarter usually ruptures. Healing takes several months.

A bacteriological examination was carried out in twelve instances with the results shown in the table:—

Clostridium welchii and *Staph. aureus* ...	6
Staph. aureus only	2
Staph. aureus and another anærobe ...	3
Cultures negative	1

A number of natural cases were given up to 300 c.c. of "anti-anærobe serum," but neither this nor convalescent serum in large doses was effective. Sloughing was hastened by the injection of large amounts of beechwood creosote and camphorated oil into the mammary tissue, together with a long incision from the milk cistern to the distal end of the teat canal.

Based on his findings, the author carried out inoculation experiments, injecting cultures of the various organisms concerned up the teat canal with a blunt needle. He concludes from his results that the majority of cases of gangrenous mastitis are due to a mixed infection, *Staph. aureus* and *Cl. welchii* being the most important. Typical gangrenous mastitis was set up only when these two organisms were injected together.

N. S. B.

* * * * *

[Pathological Anatomy of the Ligamentum nuchae. Lazlo, F. (1934.) *Deuts. tierärtzl. Wschr.* xlii, 3, 38-39.]

The author describes in detail the naked-eye and histological changes found in the *ligamentum nuchæ* of a 20-year-old mare. About 20 cms. of the funicular part of the ligament showed an irregular, very hard thickening which contained a number of discrete, oat-seed-sized, yellow foci as hard as bone. The cut surface showed greyish-white stripes and bands, cracking being perceptible on cutting. The lamellar part of the ligament contained an irregularly-shaped, fist-sized mass within which were numerous hazel- to walnut-sized dry nodules containing calcium and resembling tubercles. The connective tissue between these nodules showed cyst-like spaces filled with a reddish serum.

Histologically the fibres of the funicular portion were in many places irregularly tangled up and were separated by a tough fibrous scar-like connective tissue. The elastic fibres were broken up and degenerated, and were partly calcified. In the increased connective tissue inflammatory changes were observable, fibroblasts, lymphocytes and plasma cells being present, with calcification at the centre. Calcified nodules in the tough fibrous connective tissue showed no inflammatory changes round them, but some of them actually contained small areas of bone, the irregular marrow cavities of the latter showing connective tissue cells, lymphocyte-like cells and occasionally eosinophils. Endosteum and osteoblasts were also present. The microscopic examination of the vacuolated connective tissue revealed cavities containing serum and also nodules of calcification. The structure of the tissue was lost and it had the appearance of fibrin; within this there was a considerable infiltration with cells the exact nature of which could not be determined, although they suggested degenerated round cells. The condition was diagnosed as parasitic inflammation of the *ligamentum nuchæ* with degeneration and calcification of the elastic fibres and fibrinoid change, sclerosis and focal ossification of the connective tissue.

The author then reviews the somewhat meagre literature on the pathological anatomy of the *ligamentum nuchæ*, referring to the green pigmentation of this structure due to sarcosporidiosis (Schlegel, 1916) and a similar change following injection with trypan blue. Lesions in the ligament caused by parasites other than sarcosporidia (*e.g., Onchocerca reticulata, Filaria hæmorrhagica*) as well as other changes of non-parasitic origin are discussed. The author supports his diagnosis in the present case by comparison with the naked-eye and histological findings in these previous cases.

A. B. O.

The Ulster Joint Milk Council, the body charged with the operation of Northern Ireland's ambitious Milk and Milk Products Scheme, met last week for the first time. The objects of the scheme, as explained by Sir Basil Brooke, Minister for Agriculture, are (1) to assist the organisation of the liquid milk industry so as to provide for the people of the Province a regular, adequate supply of pure milk at a reasonable price; (2) to ensure that all producers of milk will obtain a fair return for the money and labour which they had expended; and (3) that all other persons engaged in the industry will obtain remuneration commensurate with the services they perform.

* * * * *

Returns published by the Ministry of Agriculture show that during the second quarter of 1934, 220 head of cattle valued at £20,290 were exported, Argentina taking 54 and the Irish Free State 103. In the same period 91 sheep and 147 pigs were exported. The numbers show an increase over 1933, but values were on a lower scale.

* * * * *

The Sanitary Committee of the Common Council of the City of London is in future to be styled the Public Health Committee.

Reports

LIVESTOCK IMPROVEMENT SCHEME

Report for the Year Ended March 31st, 1934*

This report tends to show how the livestock industry is reacting to various schemes proposed and supported by the Ministry of Agriculture.

Licensing of Bulls.—The date fixed for the Livestock (Licensing of Bulls) Act, 1931, to come into force was August 1st, 1934. This Act provides that no bull that attains the age of ten months on or after August 1st, 1934, may be kept without a licence or permit, which must be applied for not later than 28 days before the bull attains the age of ten months and must be made on the prescribed form. A fee of 5s. is charged. Each bull is to be inspected by an officer of the Ministry and tattoed according to whether it is passed or not.

There are several grounds on which a licence may be refused, and if the bull is suffering from some temporary defect a notice of suspension may be issued with the permit, prohibiting the use of the bull for a given period. The Ministry can, under the Act, require the slaughter or castration of any bull for which a licence is refused, or a permit may be granted for a limited period to keep the bull for fattening purposes.

In the case of a licence being refused the owner may lodge an appeal within 14 days on payment of two guineas, which is returnable if the appeal is successful.

Inspection of Canadian Cattle.—By the Ottawa Agreements Act of 1932 power was given to the Ministry of Agriculture to order the slaughter of any cattle imported from Canada that could be used for breeding and which are unsuitable for the purpose. In a total of 55,765 cattle imported during the year under review, 6,370 were found to be capable of breeding, and of these 1,498 were rejected.

Premium Bulls.—The low prices prevailing for cattle in the year under review tended to make some farmers, who had previously sent their cows to premium bulls, content to send them to the nearest bull, if the fees were low, regardless of quality and breed, and as a result of this farmers who previously have had premium bulls have not bothered to replace them with sufficiently good beasts to merit the award of a premium.

The greater stability in the price of milk, due to the operation of the Milk Marketing Board, has turned farmers to the sale of milk rather than to the rearing of good-class beasts, the cows being sent to any bull that was near at hand. But in spite of these difficulties the actual number of Bull Societies increased as farmers found that the progeny of good bulls commanded higher prices, and pedigree bulls have been obtainable at a lower price. Service fees have also been gradually reduced, about 60 per cent. being 5s. or under during 1933.

Premium Boars.—The Pig and Bacon Marketing Boards have had a certain amount of influence and the number of applications for premiums has increased. Breeders are anxious to produce the right type of bacon pig and in consequence are paying more attention to the type of animal from which they breed.

Premium Rams.—In 1933-34 30 grants were awarded for Welsh mountain rams.

This scheme has proved successful in showing how the mountain sheep can be improved by careful selection of suitable rams to mate with the hill flocks.

Horse Breeding: Heavy Horse Societies.—The grants paid to Heavy Horse Societies are having a considerable influence on the heavy-horse breeding industry. About 30 per cent. of the mares of the heavy-horse type in the returns for Agricultural Holdings of June 4th, 1933, were served by subsidised stallions.

Owing to the small number of foals bred four or five years ago, the price of geldings is high, and this has encouraged breeders, so that some subsidised societies have found it necessary to hire additional stallions, whilst the average number of mares served in 1933 advanced considerably.

The number of stallions licensed in 1933 showed a slight increase on the figures for the previous year, heavy types being responsible for this as the number of licences for light type stallions decreased from 215 to 180.

Milk Recording.—The membership of Milk Recording Societies has dropped, though this reduction in numbers is smaller than it was in previous years. This decrease is said to be due to the bad financial position of farmers but it is thought that, whilst farmers have stopped recording officially, they still carry on in private, though perhaps not quite so thoroughly.

It is interesting to note, however, that though the number of herds recorded declined by 84, the number of cows is almost the same as in the previous year.

The drought during the summer of 1933 caused a drop in the average yield of the recorded cows, though not as much as was anticipated, the average yield per cow for the year being 700 gallons as against 709 in the previous year.

A table is given showing the increase in the average yields of herds after partaking in the recording scheme, and demonstrates the value of keeping returns and how this stimulates interest in management, breeding and selection of cows.

Greater care is being taken by societies in the

* *J. Min. Agric.* Vol. xli. No. 5. 1934.

quality of the milk yielded by herds under their care. This is shown by the increase in the number of samples taken for testing for butterfat, though at the time of this report there was no uniformity in the test applied, but the recommendation by the Ministry of a uniform test has now been adopted by many of the societies.

Farmers belonging to these societies can obtain advice from agricultural organisers in regard to feeding and rationing of cows according to milk yield and this service is being utilised to the full extent by the farmers.

The average cost per cow payable by members to their societies is 4s. 2d., towards the payment of which the Ministry's grant averages 2s.

B. B.-J.

* * * * *

FEDERATED MALAY STATES

Report of the Veterinary Department for the Year 1933

The post of Principal Veterinary Officer, Straits Settlements and Federated Malay States, was abolished during the year and the veterinary services were placed under the control of a newly-appointed Director of Veterinary Research and Veterinary Adviser, Malaya, who is responsible also for the organisation of veterinary research work on problems affecting the development of the livestock industry. The new Director is Captain S. H. Whitworth, D.V.M., B.V.SC., M.R.C.V.S., late Veterinary Pathologist of the Gold Coast Colony.

At the end of the year the staff consisted of the Director, five Government Veterinary Surgeons (all members of the R.C.V.S.), five Assistant Veterinary Surgeons, nine Veterinary Inspectors, seven Veterinary Assistants and probationers, three clerks and 68 veterinary police ranks.

The animal census is shown as: 46,974 buffaloes; 46,134 cattle; 93,816 sheep and goats; 26,339 licensed dogs, and 361 horses.

The revenue of the department was $8,443 and the expenditure $121,206.

Disease.—There was no serious outbreak of disease amongst the larger animals, but poultry diseases caused considerable losses. Improved vigilance on stock movements and quarantine regulations are responsible for the satisfactory position. The prohibition of movement of cattle from Southern India and Bengal has kept rinderpest at bay. Several outbreaks of foot-and-mouth disease were reported, but were presumably of a mild nature, since only two ill-nourished calves died. Redwater was diagnosed at three centres, but there was no mortality. One case of anthrax was confirmed. Cases of suspected swine fever were met with, but some doubt as to the nature of the disease exists. The position regarding rabies is improved: the measures adopted for its suppression were prohibition of movement of dogs from affected areas, compulsory muzzling of dogs in affected areas, destruction of unlicensed and unmuzzled dogs, destruction of in-contacts, and vaccination in some districts. Canine distemper and surra in dogs are also reported.

Animal Husbandry.—This has received attention as opportunity occurred, and the officers of the department gave advice on the elementary principles of husbandry to the natives in their districts. Special attention is devoted to the improvement of buffaloes, but an urgent need for improvement in other species, including poultry, is realised, and steps to meet it are to be taken.

The report, which is a concise one, has been issued as a supplement to the F.M.S. Government Gazette of September 7th, 1934, and does not include the veterinary activities in the Straits Settlements.

W. K.

N.V.M.A. Divisional Reports

LANCASHIRE VETERINARY ASSOCIATION*

Meeting at Manchester

A General Meeting of the Lancashire Veterinary Association was held at the Grand Hotel, Aytoun Street, Manchester, on Wednesday, September 26th, 1934, at 2.30 p.m.

The chair was occupied by the President, J. Holroyd, Esq., F.R.C.V.S., D.V.S.M. (VICT.), other members present being Messrs. J. Adamson, jun., H. T. Matthews, G. Mayall, Warwick Fowle, B. Brown, J. Birtwistle, R. S. White, G. H. Locke, R. C. Locke, H. G. Hewetson, H. R. Hewetson and A. L. Mullen (Hon. Secretary). Professor J. G. Wright, Mr. J. E. Baird and Miss E. H. Patchett were present as visitors.

Apologies for unavoidable absence were received from Messrs. A. W. Noel Pillers, A. B. Mattinson, A. B. Kerr, W. Woods, R. Hughes, M. A. W. Miller, G. O. Davies, H. Sumner, J. Spruell and J. H. White.

The minutes of the previous meeting, having been published in *The Veterinary Record*, were taken as read.

The President referred to the marriage of the Hon. Secretary, Mr. A. L. Mullen, and expressed his gratification at the response of the members to his appeal for donations to a wedding present. A grandmother clock with Westminster chimes had been purchased and, after it had been suitably inscribed, would be handed over to Mr. and Mrs. Mullen. The President concluded his remarks by tendering to Mr. Mullen, on behalf of

* Received for publication, October 19th, 1934.

the members of the Lancashire Division, hearty congratulations and best wishes for the future.

Mr. Mullen expressed his appreciation in suitable terms.

Election of New Member.—On the proposition of Mr. J. Holroyd, seconded by Major J. H. Wright, Mr. E. F. Hardwick, Lancashire County Council, was unanimously elected a member of the Association.

Election of Student Members.—Under the new rules, the President said he claimed the privilege of nominating his son, Harry Holroyd, as the first student member of the Association. He appealed to the members to use their influence in getting veterinary students to join the Association, as not only would the students gain knowledge by attending the meetings, but they would also be imbued with the spirit of associating with their veterinary confrères, which would probably be maintained during their professional careers. Mr. R. S. White seconded the President's nomination, which was unanimously approved.

Mr. G. H. Locke proposed, Mr. J. Holroyd seconded, and it was unanimously resolved that Mr. Philip Richmond, 175, Didsbury Road, Heaton Norris, Stockport, be elected a student member of the Association.

Paper.—In asking Professor Wright to present his paper on "Injuries to the Dog's Eye," the President said that the essayist was too well known to need any introduction. He had addressed a meeting the previous year and on that occasion had promised to pay another visit.

Professor Wright said he had hoped to have the privilege of demonstrating some of the operations that were discussed at the meeting referred to, but circumstances had not allowed that to be done. As the Hon. Secretary had permitted him to select his own subject, he had chosen a surgical one, and he trusted that his paper presented to that meeting would interest the members.

[Professor Wright's paper, together with a report of the discussion that followed its presentation, is reproduced at the commencement of this issue.—Ed., *V.R.*]

Exhibits.—Mr. Warwick Fowle, in the course of the discussion of Professor Wright's paper, requested that, bearing in mind Professor Wright's recent contribution on obstetrics in the smaller animals, he might be permitted to digress from the subject and refer to the few small bones he had brought to the meeting, taken the previous day from the uterus of a wire-terrier brought by a small boy, with written instructions to destroy, as she had been run over ten days since and was bleeding. Septic metritis was easily diagnosed, but permission to operate was refused. In view of the history of the accident, a *post-mortem* was held and those bones were found, there being some in each horn.

The other specimen brought (by Mr. Fowle) was a knot of rope, secured from a mongrel Scotch terrier under rather unusual conditions. A foreign body in the intestines was diagnosed, and the dog was prepared for the necessary operation, but about eight hours later, when the operation was to be performed, the obstruction could not be located. The puzzle was solved by lavage, but only after a few anxious moments, as before vomition, which produced the knot of rope, over a gallon of warm saline solution was used.

A vote of thanks to Professor Wright was proposed by Mr. Warwick Fowle, seconded by Major J. H. Wright, and carried with acclamation.

A. L. Mullen, *Hon. Secretary.*

* * * * *

YORKSHIRE V.M.A.*

Meat Inspection Demonstration at Leeds

Election of Officers

A General Meeting was held on Friday, October 26th, 1934, in the offices of the Veterinary Department at the Public Abattoir, Leeds, the facilities for holding the meeting in the Veterinary Offices and the Public Abattoir being kindly granted by the Markets and Public Health Committees of the Leeds City Council.

At the commencement, owing to the temporary absence of the President, Mr. A. H. Watson, the chair was taken by Colonel J. A. Dixon. Members present were: Messrs. W. R. McKinna, W. A. Milligan, W. T. MacGregor, E. G. Duncan, W. A. Ireland, J. McKellar, J. Ritchie, A. McCarmick, G. Vernon Tyerman, H. G. Bowes, W. Halstead, D. S. Rabagliati, E. F. McCleery, J. W. Procter, W. A. Campbell, T. C. Hall, F. C. Scott and the Hon. Secretary. As visitors there were present Messrs. J. O. Powley, A. D. Campbell and Colonel J. W. Macaulay.

The receipt was reported of apologies for inability to attend from Messrs. J. Abson, J. Clarkson, G. C. Barber and G. Whitehead.

Obituary.—After the adoption of the minutes of the previous meeting, Lieut.-Colonel Bowes paid tribute to the memories of two deceased members of the Division—Mr. Martin Robinson and Mr. E. H. Pratt—whose deaths had occurred since the last meeting. He said that both these gentlemen had been for many years members of the Division and had taken a prominent part in its development. The members joined in a tribute to the deceased by standing in silence.

Election of Members.—On the proposition of Mr. W. T. MacGregor, seconded by Lieut.-Colonel Bowes, Mr. W. A. Milligan, M.R.C.V.S., Shipton, and Mr. J. Ritchie, M.R.C.V.S., Wakefield, were elected as members of the Division.

* Received for publication, November 6th, 1934.

At this point Major D. S. Rabagliati said that he did not know whether or not he would be in order at that juncture, but that he wished to mention, and wished the Division to consider, the position of those members of the Division who had recently applied for a certain post which had been officially banned by the National Association. The post to which he referred was that of Chief Veterinary Officer to the North Riding of Yorkshire County Council, and the names of those members to whom he had referred had been published in the Press as being selected for interview for the appointment. It was well known, said Major Rabagliati, that two members of the Society had been applicants for the post, and he considered that, in fairness to other members, who had loyally refrained from applying for such a post, the position of these two members as members of the Division should be considered. After some discussion on the subject, Major Rabagliati proposed that the Secretary be instructed to write to the members concerned and invite them to submit any observations they would care to make as to why, being members of this Division of the National Association, they should be applicants for a post which had been banned by the National Association: also, that the subject be referred for the further consideration of the Council, together with the replies received from the members concerned. This proposition was seconded by Mr. W. A. Milligan and was carried by the meeting.

Finance.—The Treasurer's Annual Financial Statement was adopted, on the proposition of Lieut.-Colonel Bowes, seconded by Mr. E. F. McCleery, and the balance-sheet of the Annual Dinner and Dance was also adopted.

ELECTION OF OFFICERS

The following officers were elected for the ensuing year:—

President.—Mr. A. H. Watson (re-elected).

Vice-Presidents.—Colonel J. A. Dixon, Major D. S. Rabagliati and Mr. W. R. McKinna.

Hon. Treasurer.—Mr. F. C. Scott.

Hon. Secretary.—Mr. S. Sharp.

Auditors.—Mr. W. Crawford and Lieut.-Colonel H. G. Bowes.

Council. — Messrs. G. Whitehead, H. M. Holland, Wm. A. Campbell, W. Halstead, W. T. MacGregor, E. F. McCleery, J. W. Procter and E. Ackroyd.

Meat Inspection Demonstration, by Colonel J. A. Dixon, Chief Veterinary Officer, Leeds

Before proceeding to the Abattoir, where the demonstration was given, Colonel Dixon gave a very instructive talk on the subject of meat inspection. In the course of his remarks Colonel Dixon stressed the importance to the general practitioner of being *au fait* with the principles of the practice of meat inspection, especially in cases when they were called in to give an opinion with a view to giving expert evidence in legal proceedings. Colonel Dixon went on to explain how necessary it was to have a thorough knowledge of the Ministry of Health circular known as Memo. 62 (Foods).

For the purposes of his demonstration, which was held in the Public Abattoir, Colonel Dixon, assisted by Mr. E. F. McCleery, had assembled a very comprehensive collection of diseased and unsound carcases and organs. Colonel Dixon gave a very able demonstration on these specimens, in the course of which he described the methods and procedure adopted in carrying out the inspection of the carcases and gave explanations as to the judgments passed thereon.

Great interest was displayed by the members, and the demonstrator was plied with many questions.

At the conclusion of the demonstration the members rejoined at the meeting-room and partook of tea.

Votes of Thanks.—A vote of thanks to Colonel Dixon for the great trouble he had taken in making the meeting so successful and the invaluable demonstration which he had staged was carried, on the proposition of Mr. W. R. McKinna, seconded by Mr. W. Halstead.

A vote of thanks was also passed, on the proposition of Mr. A. H. Watson (who now occupied the chair), seconded by Lieut.-Colonel Bowes, to the Markets and Public Health Committees of Leeds City Council for so kindly granting the use of the premises in which the meeting and demonstration were held.

S. Sharp, *Hon. Secretary.*

R.A.V.C. OLD COMRADES' ASSOCIATION

Re-Union Dinner

The fourteenth Annual Re-Union Dinner of the R.A.V.C. Old Comrades' Association was held at Anderton's Hotel, Fleet Street, E.C.4, on Friday, November 2nd, 1934, at 7.30 p.m., when the attendance was well up to the average.

After the loyal toast had been honoured, the Chairman, Major-General W. S. Anthony, C.B., C.M.G., Colonel Commandant of the R.A.V.C., in submitting "The Association," said that not a single annual meeting had been missed since the inception of the Association: this had not been the case with all similar associations. He was not criticising the other associations, because they must have had good reason for failing to maintain the annual event. The R.A.V.C. Old Comrades' Association had been able to maintain the annual meeting for 14 consecutive years solely by the efforts of its past presidents, who had been a source of constant encouragement to the members of the Association. Major-General

Anthony also commended the work accomplished on behalf of the Association by the Management Committee, the Treasurer and the Secretary. The finances had never been so good as they were this year. The unobtrusive work done throughout the past year by the benevolent fund, which had helped hundreds of cases, was of the utmost value, and one purpose of the Association must be to go onward with the fund.

Proceeding, the Chairman observed that there were many people present who had come from distant places, and that the date of the annual meeting was going to be changed for their benefit. They were present that night to welcome one another, and to greet new people.

Extending the Helping Hand

Major-General J. B. Tapley, D.S.O., D.G., A.V.S., in his reply, referred to the comradeship and spirit of good fellowship which had been preserved throughout the years, and which had enabled a helping hand to be extended to less fortunate comrades. He mentioned that on the previous Saturday he had returned from attending a national exhibition held in Canada: he had never seen such loyalty to England as was there displayed—it was something to which all might look up.

With regard to the future of the Association, Major-General Tapley felt supreme confidence in the Committee and the Secretary and had no fear.

Among those present were: Major-General W. S. Anthony, C.B., C.M.G. (President), Major-General J. J. B. Tapley, D.S.O., D.G., A.V.S. (Senior Vice-President), Major-General Sir Layton J. Blenkinsop, K.C.B., D.S.O., and Major-General Sir John Moore, K.C.M.G., C.B. (Life Vice-Presidents); Colonel A. G. Todd, C.B.E., D.S.O., and Sir Frederick Hobday, C.M.G. (Vice-Presidents); Colonels W. H. Walker, D.S.O., O.B.E., H. E. Gibbs, D.S.O., Lieut.-Colonel S. L. Slocock, M.C., Majors E. G. Turner, D.S.O., C. Davenport, O.B.E., Glyn Lloyd, D.S.O., Captain C. Budd, M.B.E., Lieut. W. E. Turton, and Messrs. W. Horsfield, W. G. Topham, D. F. Maccabe, R.S.M. C. A. Drew and Staff-Sergeant T. B. Crawford, members of the Committee of Management; P. V. M. Sampson (Hon. Solicitor) and Captain A. J. Warburton (Hon. Secretary and Treasurer), together with the following members:—

Lieut.-Colonel E. P. Argyle, D.S.O., Mr. W. F. Absolom, Majors W. E. Barry, D'A. S. Beck, E. C. Bowes, Captain B. H. Benson, Lieut. R. S. T. Bowden, Messrs. W. B. Baldwin, E. P. Biles, F. L. Brealy, J. H. Briddes, G. Brown, C. Bott, M. Burtwhistle, Sergt.-Major P. G. Briggs, Major T. E. Campey, M.B.E., Captain C. Collingwood, Mr. L. J. Cordery, Mr. W. F. Crome, Captain J. Daunt, Mr. W. Dowling, Lieut.-Colonel O. S. Fisher, Mr. J. R. Foy, Mr. E. R. Gregory, Majors, J. B. Hare, C. Holland, M.C., W. B. Howe, Messrs. L. F. Hayes, A. E. Howard, H. M. Harker, J. C. Harrigan, E. Hickson, G. Humphries, P. J. Holland, H. E. Jones, F. Kirtland, W. T. Lewis, Major M. A. Murphy, Messrs. C. E. Mant and I. G. Moss, Staff-Sergeant W. H. Mundy, Major B. J. W. Nicholas, Mr. J. Nash, Major G. E. Oxspring, Captain E. S. O'Kelly, Major J. J. Plunkett, O.B.E., Mr. H. J. Reavell, Mr. J. C. Renwick, Major J. Southall, Lieut. A. D. Seton, Lieut. D. F. Smith, Messrs. S. T. Salt, D.C.M., G. Sillibourne, H. J. Stockton, T. J. Sutton, M.B.E., C. Sisley, B. J. Southwell, D. H. Thompson, H. E. Tott, Captain G. S. Walker, Major P. Woodland, Captain A. H. Webber, Mr. A. G. Wicks, R.S.M. J. Wood, together with N.C.O.'s and men from No. 1 Depôt Section, Woolwich; No. 2 Section, Aldershot; No. 3 Section, Tidworth; School of Farriery, Aldershot; and Detachments Shorncliffe and Colchester.

Letters of apology for absence were received from Colonel H. J. Holness, D.S.O., Lieut.-Colonel A. E. Clarke, Major H. E. O. L. Irwin, Major P. S. Sparling, Captain J. F. Ives, M.C., Captain J. F. Macdonald, Messrs. T. Rourke, A. Henderson, H. E. Ison, A. H. Fass, R. Lumley and L. Norman.

A fine programme of music was rendered by Mr. A. C. Ballinger's band during the evening.

Annual General Meeting

The Annual General Meeting was held prior to the dinner, with the President, Major-General W. S. Anthony, C.B., C.M.G., in the chair.

The minutes of the last meeting were read and confirmed, as were the minutes of the meeting of the Committee of Management.

A statement of accounts was presented by the Hon. Secretary and Treasurer, copies of which had been circulated to all members. This showed a good year financially and, after discussion at length, the accounts were passed.

Election of Committee of Management.—The Secretary reported that the following members had resigned owing to change of stations: Majors Macartney and Lloyd and Staff-Sergeant T. B. Crawford. The following were elected to fill the vacancies: Majors Sparling and Murphy and R.S.M. Wood. After a general discussion, it was resolved to put the Annual Dinner and Meeting forward one month, namely, to the first Friday in October.

The Secretary stated that a concession had been obtained from the railways whereby members could obtain tickets for the double journey for a single fare if they returned the same day and for a fare-and-a-third if they returned within one month of the date of the Dinner.

A vote of thanks to Major-General Anthony for so ably presiding at the meeting brought the proceedings to a close.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Dec. 1st.—Meeting of the North of England Division, N.V.M.A., at Newcastle-on-Tyne.

Dec. 3rd.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, at 4 p.m.

Dec. 5th.—Meeting of the Lancashire Division, N.V.M.A., at Liverpool.

Dec. 6th.—Meeting of the Central Division, N.V.M.A., at Conway Hall, W.C.1.

Dec. 7th.—Meeting of the Southern Counties Division, N.V.M.A., at Southampton.

Dec. 13th.—Meeting of the Dumfries and Galloway Division, N.V.M.A., at Dumfries.

* * * * *

N.V.M.A. MEMORANDUM AND ARTICLES OF ASSOCIATION

The N.V.M.A. Memorandum and Articles of Association can be obtained by Members from the General Secretary, N.V.M.A., 2, Verulam Buildings, Gray's Inn, London, W.C.1. Price 1s. per copy, plus 2½d. postage.

* * * * *

PERSONAL

Appointments.—Mr. H. Burrow, M.R.C.V.S., D.V.S.M. (Edin.) has been appointed Lecturer in Veterinary Hygiene, and Mr. J. Holroyd, F.R.C.V.S., D.V.S.M. (Manch.), Lecturer in Veterinary Law and Hygiene, in the University of Manchester.

* * * * *

R.C.V.S. OBITUARY

Ainsley, Edward James, 32 Pembridge Square, Kensington, W. Graduated London December 20th, 1888; died November 21st, 1934, aged 69 years.

* * * * *

ATTESTED HERDS IN SCOTLAND

Regulations for Official Certification

We understand that the following arrangements have been made by the Secretary of State for Scotland under and in terms of Section 9 of the Milk Act, 1934:—

1. The Department of Agriculture for Scotland will undertake free of charge the testing with tuberculin of herds of cattle of any registered producer of milk in Scotland and if no reactors are found, to issue Certificates of Attestation in respect of the individual herds provided that the management of the herd and the condition in which it is kept are considered by the Department to be satisfactory and that the herd owner agrees to observe the Rules laid down by the Department.

Certificates of Attestation will be valid for twelve months from the date of issue.

An applicant for a Certificate must satisfy the Department that he is a producer registered under a Milk Marketing Scheme in force in Scotland, and must give a written guarantee that he will to the best of his ability observe the printed Rules and any amendment or addition that may be made thereto.

2. *Herds eligible for Official Test.*

Applications will be accepted only from herd owners who (1) hold licences for selling milk as Certified milk or as Grade A (T.T.) milk in terms of the Milk (Special Designations) Order (Scotland), 1930,* made by the Department of Health for Scotland or (2) have taken steps to eradicate tuberculosis from their herds and whose herds have had no reactors in the last two tuberculin tests applied to them. The last such test must have been made within twelve months of the date of the owner's application, and the previous test not less than six months nor more than twelve months before the last test. The application must be accompanied by a Certificate or Certificates to this effect issued by the veterinary surgeon or surgeons who carried out the tests on behalf of the owner.

The official test of herds whose owners are licensed as aforesaid will be carried out not earlier than 60 days after the date of the last test made in terms of the Milk (Special Designations) Order (Scotland), 1930.* The official test of other herds will be carried out not earlier than 60 days after the date of the second of the above mentioned tests applied by the owner's veterinary surgeon.

Official tests will be applied to all animals (including calves) in the herd.

3. *Award of Certificate.*

Provided that the official test discloses no reactors and that the management of the herd and the conditions under which it is kept are in the Department's opinion satisfactory, a Certificate of Attestation will be granted.

4. *Renewal of Certificate.*

The Certificate will be renewed, if desired by the owner of the herd, after a further official test of all cattle in the herd, carried out towards the end of the period covered by the Certificate, provided that no reactors are disclosed, and that the management of the herd, and the conditions in which it is kept continue, in the Department's opinion, to be satisfactory.

If reactors are found, the renewal of the Certificate will be suspended, and the following restrictions and requirements will operate, but the herd will not be removed from the Register mentioned in paragraph 6 below unless and until the Certificate is cancelled under the provisions of (*e*) below.

(*a*) The reactors will be immediately isolated and disposed of by the owner as quickly as possible and the premises thereafter disinfected. During the period of suspension non-reactors from the herd will not be permitted unrestricted entry into another attested herd.

(*b*) The non-reactors must be submitted to further official testing, such tests to take place not earlier than 60 days from the date of completion of the disinfection of the premises.

* Statutory Rules and Orders, 1930—No. 327/s.21.

(*c*) If no reactors are revealed as the result of such retest, the Certificate of Attestation will be renewed for a further period of 12 months.

(*d*) If reactors are revealed as the result of the retest, they must be immediately removed from the herd and the premises again disinfected. A second official retest will then be carried out at the expiration of 60 days from the date of completion of the last disinfection of the premises.

(*e*) If additional reactors are found as the result of the second retest, the herd will be removed from the Register of Attested Herds and the Certificate of Attestation will be cancelled; and no further official test will be made until the conditions laid down in paragraph 2 above are complied with, when the question of reinstatement will be considered.

(*f*) If no reactors are found as the result of the second retest, the Certificate of Attestation will be renewed for a further period of twelve months.

(*g*) During the period of suspension of the renewal of the Certificate of Attestation, the rules applicable to Attested Herds will continue to operate unless and until the Certificate is cancelled in the manner indicated in (*c*) above.

(*h*) If an official test reveals an abnormally large proportion of reactors, the herd may be removed from the register and the Certificate of Attestation may be cancelled.

5. *Cancellation of Certificate.*

A Certificate may be revoked by the Department at any time if in their judgment the owner of the herd fails to observe any of the Rules for the time being laid down by the Department, provided that in lieu of the cancellation of the Certificate under this paragraph, part of the bonus payable to the owner of the herd for milk sold from the attested herd may be withheld for such period as may be determined by the Department.

6. *Tuberculin Tests.*

(i) *Cost.*—Tuberculin testing by the Department will be limited to the official tests referred to in the Scheme and will be carried out without charge to the herd owner. The preliminary tests applied on behalf of the owner prior to his application to the Department as described in paragraph 2 above must be paid for by the owner.

(ii) *Retest at any Time.*—The Department may if they think fit at any time cause an official retest to be made of all animals in the herd.

(iii) *Testing of Swine.*—To prevent the risk of infection from swine kept on the same premises as the attested herd, the Department may by notice in writing require the tuberculin testing of such swine by a veterinary surgeon at the owner's expense or impose such limitation on the free movement of such swine within the premises as they may consider necessary for that purpose.

7. *Register of Attested Herds to be Published.*

A register of attested herds comprising particulars of herds in respect of which a Certificate of Attestation has been issued by the Department of Agriculture for Scotland will be kept by the Department and published from time to time.

8. *Bonus on Milk from Attested Herds which is not Sold as Graded Milk.*

There will be paid to the owners of Attested Herds a bonus not exceeding 1d. per gallon for all Certified and Grade A (T.T.) milk that is sold from such herds through the Milk Marketing Boards in Scotland, in accordance with the provisions of the marketing schemes of those Boards, and that is sold at a lower price than that ruling for Grade A (T.T.) milk in the area for the period in question. The bonus will be paid through the appropriate Milk Marketing Boards in accordance with arrangements made by the Department with the Boards.

9. *Forms* of application and copies of the Rules required to be observed by the owners of Attested Herds may be obtained from the Secretary, Department of Agriculture for Scotland, York Buildings, Queen Street, Edinburgh 2.

10. In all matters relating to the Scheme, the decision of the Department of Agriculture for Scotland shall be final.

. . . . .

Rules Required to be Observed by the Owners of Herds Certified by the Department of Agriculture for Scotland under the Scheme for the Official Certification of Cattle Herds Free from Tuberculosis (Attested Herds).

1. *Management.*—The cattle must be fed and cared for in such conditions as will tend to promote their health.

2. *Isolation of Herd.*—The attested herd shall be completely isolated from all other cattle.

3. *Fences.*—The fences dividing the premises specified in the Certificate of Attestation from adjoining land shall be maintained to the satisfaction of the Department in such a condition as to prevent the infection of the Attested Herd by cattle on the adjoining land.

4. *Consent of Department to Tuberculin Tests.*—The owner of an Attested Herd shall not submit any animal in an Attested Herd to a tuberculin test without the consent of the Department. Such consent will not be withheld to a test carried out at a reasonable period before or after an official test.

5. *Vaccination.*—The owner of an Attested Herd shall not allow any animal in the herd to be vaccinated against tuberculosis.

6. *Records.*—The owner of an Attested Herd shall keep accurate records in form of the Schedule (annexed), of:—

(*a*) all cattle on the premises comprising the Attested Herd stating breed, age, sex, and the marking and the herd book number and the name of animal if any.

(*b*) all births and deaths of cattle on the premises specified in the Certificate including cattle slaughtered, and

(*c*) all bovine animals moved to or from the premises specified in the Certificate, including the addresses of the premises from or to which they were so moved, the name of the vendor or purchaser as the case may be, if available, the date of movement and the purpose of such movement.

7. *Marking.*—The owner of an Attested Herd shall cause every animal in the herd to be marked in a manner approved by the Department or one of their Inspectors.

8. *Examination by Inspector of the Department.*—The owner of an Attested Herd shall give all reasonable facilities for the entry of an Inspector of the Department into the premises for the purpose of an examination of the premises and of the animals thereon, and of the records required

to be kept or permits issued for the purposes of the scheme and for the testing of the animals. The owner shall furnish to the Inspector all such information as may reasonably be required by the Inspector for the purposes of the administration of the Scheme.

9. *Regulation of Movement of Cattle to and from the Premises of an Attested Herd.*

The following movements of cattle to or from the premises of an Attested Herd are prohibited unless such movements are authorised in each case by a written permit issued by an Inspector or other officer of the Department, namely:—

(a) *Movement to the premises of an Attested Herd from any other premises.*

(b) *Movement from the Premises of an Attested Herd to*

(i) The premises of another Attested Herd;

(ii) a market specially reserved and authorised by the Department for the exposure of cattle from Attested Herds where no other cattle and no pigs are exposed;

(iii) an agricultural show.

A permit for the movement of an animal from an Attested Herd to an agricultural show will be granted only in a case where special accommodation has been set apart for animals from Attested Herds. Such a permit, whether available for movement to one or more shows providing such special accommodation, will be subject to a condition requiring the isolation and retesting of the animal in accordance with Rule 10 (*b*) and (*c*) before it is re-admitted to an Attested Herd.

10. *Conditions to be Attached to all Permits.*

The issue of a permit under Rule 8 will in all cases be subject to the following conditions:—

(*a*) during the movement the animal shall not be allowed to come into contact with any other cattle not being moved with a similar permit granted under these Rules, nor with swine;

(*b*) the vehicle in which the animal is conveyed shall be cleaned and disinfected in the following manner immediately before the animal is placed in it. [Particulars of disinfection are then given.]

11. *Additional Conditions to be Inserted in Certain Cases for Movement to Premises of an Attested Herd.*

The following additional conditions will apply in the case of permits for the movement of cattle to the premises of an Attested Herd from any premises except (1) those of another Attested Herd, or (2) a market specially reserved and authorised by the Department for the exposure of cattle from Attested Herds where no other cattle and no pigs are exposed, or (3) an agricultural show where special accommodation has been set apart for cattle from Attested Herds:—

(*a*) the animal must be certified by a veterinary surgeon to have passed the tuberculin test within 14 days prior to movement;

(*b*) the animal shall on arrival on the premises be isolated from the remainder of the Attested Herd for a period of 60 days, provided that during that period only such contact with other animals in the herd shall be allowed as is necessary for breeding purposes;

(*c*) at the end of the said period of 60 days the animal shall pass a further tuberculin test carried out (free of cost to the owner) by a Veterinary Inspector of the Department before it is added to the main herd; if the animal reacts it must forthwith be removed from the premises and the part of the premises occupied by it must be disinfected.

12. *Use of Milk, etc., for Feeding Animals.*

No milk or dairy by-product shall be brought on the premises of an Attested Herd for feeding to animals except direct from the premises of another Attested Herd unless such milk or dairy by-product is pasteurised or sterilised by heat.

* * * * *

ARMY VETERINARY SERVICE

London Gazette—War Office—Regular Army.

Nov. 23rd.—Maj. F. Hogg retires on ret. pay (Nov. 24th).

Regular Army Reserve of Officers

Maj. F. Hogg (ret. pay), to be Maj. (Nov. 24th), with seny., June 2nd, 1924.

* * * * *

INDIAN ARMY VETERINARY CORPS

The regulations for the admission of Indians to commissioned rank in the Indian Army Veterinary Corps have been provisionally approved. As was indicated in our advertisement columns last week, an examination of candidates will be held at Lahore in January. The Quartermaster-General at Delhi is dealing with applications.

* * * * *

REFUSAL OF ADMISSION TO VETERINARY OFFICER: FARMERS WARNED

A prosecution of interest alike to veterinary officers and farmers was heard in Hamilton Sheriff Court on November 7th, when Andrew Ballantyne, farmer, Shotlin Farm, Glassford, denied having, on April 7th last, without lawful authority or excuse, refused Mr. John Weir, a veterinary officer of Lanark County Council, admission to a byre at Shotlin Farm.

The charge stated that the byre was a building the inspector was entitled to enter in order to examine, at all reasonable hours, any bovine animals there, and the offence was a contravention of Section 52 (6) of the Diseases of Animals Act, 1894-1925. The accused was defended by T. H. Miller, Glasgow, secretary of the Lanarkshire Executive of the National Farmers' Union.

The veterinary officer, Mr. John Weir, stated that he visited the farm on two occasions on April 7th.

Accused refused him admission to the byre unless he washed his hands with disinfectant before doing so. Witness refused to do that, explaining that he had been to no other farm that morning.

Later, Mr. Weir returned to the farm, accompanied by Police Superintendent Macdonald of the Lanarkshire Constabulary, and again was refused admission. Witness said he had no knowledge of animals being suspected of disease on accused's farm.

No evidence was led for the defence, but the accused's agent explained that the question was at present the subject of correspondence between the National Farmers' Union and the Ministry of Agriculture.

The accused maintained that under the Tuberculosis Order of 1925 an inspector had no right

to carry out any inspection unless information with regard to a diseased animal had been received by the local authority. Under the Order there was no general right of access to premises.

Sheriff M'Donald said he was going to convict, and the Fiscal remarked that he would be satisfied with a conviction, and would not press for a penalty. He wanted it to be known among farmers that they were not entitled to refuse permission to inspectors to any buildings or to regulate their work. He was quite ready to concede that the accused might have been under a mistaken impression.

Sheriff M'Donald formally dismissed the accused with an admonition.

Mr. Miller indicated to the Sheriff that he might ask for a stated case with a view to appeal.

* * * * *

Errata.—In reference to the paragraph, on page 1420 of last week's *Record*, stating that the Herefordshire Agricultural Committee had passed a resolution asking the Ministry of Agriculture to make an order that cattle examined by county veterinary officers under the Milk Marketing Board's Accredited Producers' Scheme and found to be suffering from tuberculosis should be branded before being placed on the market, a correspondent forwards us the following correction.

In their report to the County Council, the Committee stated that they were of the opinion that if any scheme for the eradication of tuberculosis in cattle was formulated by the Ministry of Agriculture, there should be some provision for the marking of those cows which reacted to the official tuberculin test, and they recommended that the County Council communicate with the Ministry to this effect.

After discussion, the County Council deleted from the report the paragraph regarding tuberculosis in cattle.

. . . . . .

Mr. F. Pickering of Hexham, writes: "In my contribution to the discussion on Mr. W. Lyle Stewart's paper on abortion, I said: 'With regard to blood testing my first experience in a large herd was not a happy one. It occurred about nine years ago. The *reactors* were sent away to new pastures and two abortions took place within about a fortnight.' I should have said the *non-reactors*."

* * * * *

GLASGOW VETERINARY COLLEGE: PRIZE DISTRIBUTION

The annual prize distribution in connection with the Glasgow Veterinary College took place on November 21st within the College at 83, Buccleuch Street, Glasgow, Mr. Alexander Murdoch, C.A., Hallside, the chairman of the Governors, presiding. Lord Provost A. B. Swan of Glasgow handed over the prizes.

In his opening speech, Mr. Murdoch said that thanks to the support of public and private friends, the loyalty of the teaching staff, the success of the students, and the attention of the Governors, the Glasgow Veterinary College continued to flourish. In 1925, unfortunately, the Government withdrew its support from the College. That came as something of a shock to the Governors of that time; but the Governors decided to carry on, and their policy had been well justified. (Applause.) In 1925 there were 60 students attending the College, and to-day there were over 225—the highest number in the history of the College. It was very gratifying to the Principal that all graduates of the College were either in private practice or steadily employed in other directions. In 1925 the financial position of the College gave the Governors considerable concern, but by exercising strict economy without sacrificing efficiency, the Governors were able to show a balance-sheet which showed steady improvement and promised financial stability. The thanks of the Governors were due to the Corporation of Glasgow and the adjoining County Councils, which, knowing the needs of the College, had supported it in the good work which was being done, as well as to the societies, associations, and private individuals who had generously contributed to the funds.

The vote of thanks to the Lord Provost was proposed by Mr. Hugh Begg, F.R.C.V.S., and the vote of thanks to the chairman was proposed by Mr. M. R. Macfarlane, president of the students' council.

In reply, Mr. Murdoch, who is a director of the Highland and Agricultural Society, said that there was little chance of the H. and A. S. withholding its medals from the college, and as long as he was on the board he would continue to support the £100 grant so long as the college continued the good work it was doing.

The Prize-Winners

Mr. John M'Lintock was awarded the gold medal presented by the board of governors to the student gaining the highest aggregate in all the professional examinations, the silver medal in surgery, certificates in medicine, surgery, and parasitology, and the governors' prize of £5 for the best year's work in the Glasgow Veterinary Medical Association.

The awards were:—

Five-Year Course

First Year.

R. F. Armour, Netherlee, Glasgow—Silver medal in Chemistry and certificates in Chemistry and Biology (also gained second honours in the professional examination).

James Donald, Renfrew—Silver medal in Biology and certificates in Chemistry and Biology (also gained second honours in the professional examination).

Certificates in Chemistry and Biology—J. G. E. Kerr (also gained second honours in the professional examination); A. M. M'Callum (credit in Biology in the professional examination); W. A. Whiteford (credit in Chemistry in the professional examination).

In Chemistry—Donald M'Intyre (credit in Chemistry in the professional examination); David L. Stewart (also gained second honours in the professional examination); C. D. Wilson (also gained second honours in the professional examination). Biology—James S. Bain (credit in Biology in the professional examination); Edward Gorman; G. B. Irvine (credit in Chemistry in the professional examination); Charles M'Nulty; Miss M. C. Stevenson (also the special prize presented for the best kept laboratory book in Practical Biology); H. F. Turner (credit in Biology in the professional examination).

Second Year.

James M. Robertson, Skye—Silver medal in Junior Anatomy and certificate in Junior Anatomy.

John Wharrier, Dumbarton—Silver medal in Physiology and certificate in Physiology.

Certificates in Physiology—Duncan S. Campbell, A. K. Fraser, H. A. M'Clelland.

FOUR-YEAR COURSE.

Class "B."

John Marshall, Airdrie—Silver medal in senior Anatomy and certificate in senior Anatomy.

Class "C."

F. J. Hill, Ecclefechan—Silver medal in Pathology and certificate in Hygiene (also gained second honours in the professional examination).

D. M. Cochrane, Campbeltown—Silver medal in Materia Medica and certificate in Materia Medica (credit in Hygiene in the professional examination).

J. B. Brooksby, Glasgow—Silver medal in Hygiene and certificate in Hygiene.

Certificates. — In Materia Medica — Robert M'Grath, J. J. Murdoch. In Hygiene—James Geddes, John MacKinnon, William Wilson.

Class "D."

W. D. Ross—Silver medal in Medicine and certificates in Medicine, Surgery, and Parasitology.

Certificates in Parasitology.—J. R. Lawson, D. M. M'Intyre, and J. K. Thomson.

The Editor acknowledges, with thanks, the receipt of the following:—

Communications from Professor J. F. Craig (Dublin), Mr. C. P. Hynes (Lismore), Major Hamilton Kirk (London), Professor J. J. O'Connor (Dublin), Mr. W. A. S. Stevens (Southsea), and Mr. D. E. Wilkinson (Chigwell).

Report of a meeting of the Scottish Metropolitan Division, N.V.M.A., from Mr. J. N. Ritchie, Hon. Secretary.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

* * * * *

A TALE OF THE TEST

TO THE EDITOR OF THE VETERINARY RECORD

Sir,—One day during the past week I was invited to visit the premises of a very small dairy farmer who is contemplating building a Grade A (t.t.) herd. His milking strength is about a dozen cows.

He informed me on arrival that he would not require every cow tested as he had got on with some "injections" himself. I did not pay much attention until he said to me "This is a reactor—feel that!" To my astonishment, I found that he had subjected his herd to the double intradermal tuberculin test and had found two reactors. His idea presumably was to ensure that I should only be called upon to test clean cows for the Ministry of Health certificate.

I asked where he got his tuberculin; he mentioned a firm of wholesale druggists, and I expressed some little surprise at their supplying him. Apparently he had obtained it through a relation, a doctor in London, who had also been kind enough to make the injections.

Yours faithfully,

H. BELL.

P.S.—An appropriate title for this short story would be "Beaten on the Post."—H. B.

67, Grenfell Road,
Maidenhead.
November 26th, 1934.

Diseases of Animals Acts.

SUMMARY OF RETURNS

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 1st to 15th Nov., 1934	15	17	19	2,556	2	4	40	105	37
Corresponding period in									
1933	18	30	—	—	4	12	65	64	59
1932	14	14	2	184	1	1	30	36	17
1931	14	18	—	—	3	4	10	97	48
Total 1st January to 15th November, 1934	333	377	52	6,316	106	176	532	1,527	874
Corresponding period in									
1933	257	303	87	7,805	122	209	364	1,241	801
1932	292	358	15	1,282	112	173	234	1,423	693
1931	409	458	97	10,649	127	225	243	1,723	736

NOTE.—The figures for the current year are approximate only. § Excluding outbreaks in Army Horses.